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Monuments in Transit: Rapid transit and the Creation of the Industrial City in America

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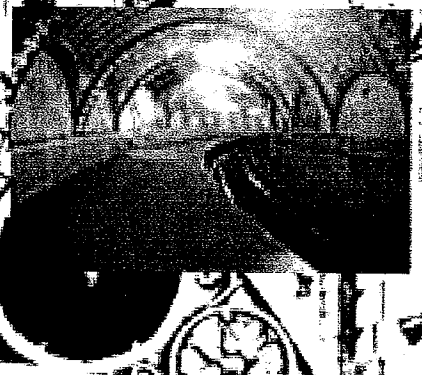
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Monuments in Transit: Rapid Transit and the Creation of the Industrial City in America



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Chapter One: The Crisis of Density

The years between 1865 and 1917 represent a crucial turning point in the history of America. This era is the bridge between the agrarian republic fostered by Thomas Jefferson and Andrew Jackson and the industrialized, urban world power of Franklin Roosevelt and Bill Clinton. The period covered in this essay is particularly important as a time of dramatic change in American cities and a time when cities were at the forefront of the American mind. The cities of the late nineteenth and early twentieth century were unique in American history in that they were far denser in terms of population than before or after the conflicts which bookend our timeframe. Immigrants particularly lived in crowded neighborhoods, many of which had once been the homes of upper class Anglo-Americans. Cities took on a guise that they had not had before the Civil War, nor after World War I, that of population density higher than the industrial cities in Northwestern Europe.

Americans are not fond of population density. Though they may enjoy visiting Manhattan, many of them would prefer not to live there. One look at the suburbs spreading around cities like Hartford, Boston or New York will tell even those without a background in sociology that Americans like to have plenty of space between them and their neighbors. History courses often focus on the suburbanization of America, which occurred after the Second World War, however, the impulse towards lower density living is far older than the 1950's. Americans between the surrender at Appomatox and dawn of World War One

watched their cities take on an entirely new shape at the hands of industrialization and immense waves of immigration from Europe. For the most part, the changes wrought were not encouraging to established white Americans. The writings of the era were haunted by the idea that American cities had gone out of control and that unless something were speedily done they would be lost forever to white, Anglo-Saxon Americans, and become the eternal dark preserve of factories and immigrant Catholicism.

The two eras taken on by this paper, the Gilded Age, which ran roughly from the close of the Civil War to 1893 and the Progressive Age, which lasted from 1893 until the outbreak of World War One both feared urban density and searched for ways to control it. In a vast array of efforts, driven by a fear of urban over-crowding, Americans launched an all out crusade, that would include the diverse and often separate fields of politics, art and economics, to lower urban populations and manage urban areas. During the near half century between 1865 and 1917, cities like Boston and New York which before the Civil War had been comparatively small and centered on the harbors which had made their settlement practical at outset, underwent massive infrastructure projects to service a booming population. Communication, power, sanitation and transportation grids, which stabilized and ordered the formerly undirected growth of cities, became central to American, urban life.

In the field of politics, men imbued with the spirit of the age would struggle against real and perceived abuses in the American political system. In the arts, taste-makers such as Oscar Wilde, Jasper Cropsey and the great architects McKim, Meade and White would give Americans an artistic outlook on life which not only directed them how to decorate their homes and buildings,

but a way to conduct their lives. In economics the eternal American urge to make a profit, in this case, the fortunes to be made in rationalizing the city of the late nineteenth century, came clad in the white robes of humanitarianism. This was an age when white, middle and upper class Americans determinedly brought the arts, politics and economics to bear on the problem that they saw confronting them. The problem was industrialized cities, populated by foreigners living at incredibly high population densities, a situation they saw as potentially dangerous and ultimately destructive to the republic. The effort to diffuse this seeming time bomb would be successful. Following World War One, urban population densities across the nation would fall as people shifted their homes towards the suburbs. This thesis will focus on one agent of urban decentralization created during and characteristic of the fifty years in question: urban mass transportation.

Mass transportation in the forms of subways, elevated railroads and streetcars are central to this period, as they were among the key driving forces behind the lowering of urban population densities. All the theories floated during these fifty years might have been in place, but theoretically without the advent of cheap, rapid transit, the urban middle class might have continued to live at the extremely high densities and proximity to alien immigrants that so bothered them. Rapid transit made it possible for people to cheaply commute from a home at the urban periphery to jobs in the central city. Without this suburbanization would never have occurred on the scale that it did. This essay will look at rapid transit through the lenses of economics, politics and the arts as one of the solutions produced by upper and middle class Americans to create the

kind of society they wanted and one that would ultimately bring an end to the crisis in density.

The historiography of mass transit is certainly a large corpus of work. On one side there is a buff or fan literature enjoyed by a host of "armchair motormen." Though perhaps not seen at first as a repository of knowledge worthy of deep academic consideration, this sort of material is helpful. It is particularly useful in establishing the sorts of technical challenges met by builders during construction and operation, as well as giving solid documentation concerning where routes, some of which are no longer in existence, ran. In terms of more conventional academic writing there are also many fine works such as Sam Bass Warner's Streetcar Suburbs, which speaks to the more political aspects of subway construction and its social results. This essay, while drawing on both of these types of sources, will also try to match them with the equally significant body of works detailing the artistic moods of the Gilded and Progressive ages. Further, it will attempt to show the creation of public transportation systems as a component of a greater effort to manage burgeoning cities and their populations. Finally, unlike other works in this field which tend to focus on one or more cities, but taking each separately, this essay will specifically target two cities, New York and Boston. Both were urban centers with colonial pasts, both dealt with expanding immigrant populations, industrialization, traffic congestion, difficult terrain and unique political structures. Also, both cities attacked the question of mass transit at roughly the same time creating an interesting comparison between the two.

This, however is not the time to begin a detailed comparison of Boston or New York's political or transit systems, what of the concepts and feelings that

united all established Americans in this era? It has been postulated above that white, Anglo-Saxon Americans were anti-urban in their outlook and ambivalent about the new immigrants who were flooding into the country following the closure of the Civil War. A specific example of such sentiment can be found in an article taken from the official organ of The Charity Organization Society of New York City, Charities gives a perfect summation of how established middle and upper class Americans viewed the new arrivals. Robert DeC. Ward, a contributor to the publication in an article entitled "The Immigration Problem: Its Present Status and Its Relation to the American Race of the Future," notes that earlier immigrants had been significantly easier to deal with as they had come from northwest Europe. They hailed from a stock not particularly divergent from those of English descent who had originally dominated the colonies and the early American republic. Ward states that the immigrants from northwest Europe were welcomed with opened arms as they were similar to Americans, "racially, historically, socially, industrially and politically."¹ Ward cast the post-Civil War immigrants in a different light saying that they hail from southeastern Europe and were "Asians." They were also, according to Ward, recalcitrant in assimilating, poor illiterate and Catholic.² Clearly, here is a picture of the immigrant as a dangerous alien, an animal that needed to be controlled to prevent it from running wild and doing unspeakable damage. Ward did not confine his scope to New York city where the journal was published but looks north to Boston where he noted that a new steamship line created by Cunard

¹ Robert DeC. Ward, "The Immigration Problem: Its Present Status and Its Relation to the American Race of the Future," Charities, 6 February, 1904: 138.

² Robert DeC. Ward, "The Immigration Problem: Its Present Status and Its Relation to the American Race of the Future," Charities, 6 February, 1904: 138.

giving direct passage from Naples to Boston. The new line, for Ward was responsible for bringing, "the dregs of society" to the city of Boston.³ Ward was by no means a voice from the fringe ignored in his damning of immigrants, far from alone in his assertions, he quotes a medical expert of the era, Dr. Bushee. Dr. Bushee felt that rather than assimilating as the old immigrants had done, the new immigrants "herd together persistently and form objectionable permanent slums." These slums were not only bad for property values, but in Dr. Bushee's opinion were responsible for increased infant mortality, crime and "sexual depravity."⁴ According to Ward, there were some good immigrants, the Jews for example seemed to make good citizens, but Ward assures his readers that living in slums was dragging even the Jews into a morass of corruption.⁵ The problem seemed to be a thorny thicket of difficulty. Immigrants such as the Italians were not assimilating well and were producing slums and delinquents that would overrun American society. Pointing to numbers of immigrants arriving in New York, New Jersey and New England, Ward noted with alarm that immigration was on the rise and laws strong and comprehensive enough to stem the tide would not be forthcoming quickly enough to make any serious difference. The solution was clearly an all out effort to get the dregs of Europe to reform and become solid American citizens. Again, Ward was not a lone figure on the extreme right raving about racial purity. In the closing paragraphs of his article he quotes Adele Shaw, a member of the New York City School Board. Ms. Shaw sounded a clarion call saying that, "salvation depends on converting all these

³ Robert DeC. Ward, "The Immigration Problem: Its Present Status and Its Relation to the American Race of the Future," Charities, 6 February, 1904: 142.

⁴ Robert DeC. Ward, "The Immigration Problem: Its Present Status and Its Relation to the American Race of the Future," Charities, 6 February, 1904: 145.

barbarians," into good Americans.⁶ As early as the 1860's Americans labored under the firm conviction that most immoral behavior centered on cities with their large immigrant populations.⁷

According to another contributor to Charities, Eliot Norton, the best way to accomplish this program of assimilation that would create virtuous Americans out of the almost subhuman beasts swarming out of steerage and into urban areas was to send them to the suburbs.⁸

Withdrawing outside the bounds of city always seemed to the panacea that Americans applied to their problems in this era. If a man failed and went bankrupt in the cities of the northeast, he could always, as Horace Greeley instructed one down and out gentleman, to "go west." The countryside was the place where free from some of the fetters placed by society, a man could strike out and truly prove his worth.

The country had always been a better place than cities in American thought stretching as far back as Thomas Jefferson,⁹ but prior to the Civil War, the suburbs, that is the areas around cities, were viewed with some suspicion. A retreat deep in the country was certainly a worthy goal, but the suburbs connoted squalor, it was the home of disreputable people.¹⁰ Following the Civil War, however, a dramatic shift in that view took place within American culture. Both enough wealth and density had accumulated in the cities to make people

⁵ Robert DeC. Ward, "The Immigration Problem: Its Present Status and Its Relation to the American Race of the Future," Charities, 6 February, 1904: 143.

⁶ Robert DeC. Ward, "The Immigration Problem: Its Present Status and Its Relation to the American Race of the Future," Charities, 6 February, 1904: 145.

⁷ Kenneth T. Jackson, Crabgrass Frontier: The Suburbanization of the United States, New York, Oxford University Press: 1998. Pg. 70.

⁸ Eliot Norton, "The Need of a General Plan for Settling Immigrants outside the Great Cities," Charities, 6 February, 1904: 153,

⁹ Kenneth T. Jackson, Crabgrass Frontier, Pg. 68.

want homes on the periphery of urban areas.¹¹ It would seem that in the years after 1865 as more people moved out of agricultural jobs, especially in the northeast, they began to look to the suburbs as a place where they could enjoy the best of both worlds. As a residential area, the suburbs allowed homeowners the benefits of nineteenth century urban life, without some of the unpleasant drawbacks.

Both Boston and New York City developed some early suburbs before the outbreak of hostilities between the states. Between 1800 and 1850, Cambridge and Somerville would arise as Boston's premier suburbs and Brooklyn, once regular steam ferries began running to and from Manhattan began a career as a residential zone for New York as early as 1814.¹² According to Kenneth Jackson, the Williamsburg section of Brooklyn gained 37,000 new inhabitants as the result of steam ferry service between 1835 and 1852. The people filling up Brooklyn's bedrooms were for the most part middle class New Yorkers, a class which included merchants, medical professionals and shop keepers.¹³

Clearly, even before the Civil War, Americans were choosing to make their homes in the suburbs. Trends stretching back into the eighteenth century, however, combined with the appeal of suburban living to produce a dynamic mixture that would have a deep and lasting impact on American life. For Christianity, and in those days America could claim to be a "Christian" country, the family had always been central, and during the eighteenth century the

¹⁰ Kenneth T. Jackson, Crabgrass Frontier Pg. 19.

¹¹ Kenneth T. Jackson, Crabgrass Frontier, Pg. 20.

¹² Kenneth T. Jackson, Crabgrass Frontier, Pg. 21 & 24.

¹³ Kenneth T. Jackson, Crabgrass Frontier, Pg. 28.

private life of the family had undergone a major expansion.¹⁴ Gone was the notion of a medieval home in which many actions might take place in one room. Nineteenth century Americans wanted space and privacy. The floor plans of houses, which grew progressively more complex as the century progressed indicated that the home was being segregated into public and private spaces. The private home, nestled in the suburbs, showed the drive for space and privacy was not only restricted to the house itself, but to the area around it. For nineteenth century Americans, the home constituted a bulwark of morals, where the goodness and virtue, vital to the health of one's soul and the republic would be cultivated. The hearth also served as a refuge against the buffeting of what appeared to be an increasingly cold and complicated world. Within this bastion of morality, the wife and mother reigned as a domestic queen charged with the moral education of her children and well being of the breadwinner. Owning a home conferred a certain aspect of morality upon those who lived within its walls. Old English traditions, engrained deeply in American society placed great significance in land ownership, as a basis of permanent wealth, proof against the fluctuations of fortune and the rootless nature of urban living.¹⁵ In short, popular wisdom of the era dictated that moral rectitude was generated in the countryside. The rural, and even its reintroduction to urban areas, such as New York's Central Park, permeated all aspects of American life in the effort to produce moral citizens. Suburban homes made for moral domesticity, rural parks produced moral recreation; the scope of suburbanization did not even leave the dead to rest in peace. Cramped colonial churchyards, swallowed by

¹⁴ Kenneth T. Jackson, Crabgrass Frontier, Pg. 47.

¹⁵ Kenneth T. Jackson, Crabgrass Frontier, Pg. 49, 50 & 53.

urban areas, like Copp's Hill Burying Ground, in Boston were discarded in favor of rural cemeteries like Boston's Forest Hills and Cambridge's Mount Hope.¹⁶

The creation of suburban life with its strong engrained moral program also enjoyed a mirroring movement within urban areas. Often times it would seem that those looking to decamp to suburbia were also trying to create better cities as well. The same effort by Americans to control the shape of their cities that created rapid transit systems also produced a wave of change in urban government that would have profound effects on the birth of mass transportation systems. The nineteenth century is often seen as an era of unbridled corruption in American politics at the urban level and in some cases justly so. In January of 1861, Mayor Fernando Wood of New York City placed profit ahead of patriotism when he suggested to the City Council that New York should leave the Union with the southern states thus allowing the city to become a highly profitable neutral trading area.¹⁷ In the 1880's and 90's attacks on American city government became especially vocal, the system was denounced as inefficient, backward and unbearably crooked.¹⁸ In twentieth century histories of nineteenth century urban government, the definite sides of corruption and virtue have become more fluid, but even relatively recent studies have ended with declarations of urban government's weakness and inefficiency during the latter half of the nineteenth century.¹⁹ Some of the nineteenth century's dark view of its own urban government certainly reflects the bias of those doing the writing. The same white, protestant, upper and middle class Americans who felt

¹⁶ Kenneth T. Jackson, Crabgrass Frontier, 55.

¹⁷ James M. McPherson, Battle Cry of Freedom: The Civil War Era, New York, Oxford University Press: 1988. Pg. 247.

that the nation they knew was slipping away also generally felt they were loosing control of city governments to the newly arrived immigrants. The loss of control, however, was not as deep as period writings would have us believe. In general, by the last third of the nineteenth century and into the early twentieth city governments were split between a protestant upper middle class executive branch and an immigrant catholic legislative branch.²⁰ Further, if anything the legislative branch in city government was on the wane during the Gilded and Progressive ages. By the 1890's large cities like New York and Boston were run mostly by their mayors and a collection of executive councils. The corrupt aldermen who call to mind Plunkett of Tammany Hall were no longer in command pushed to the wayside often for their lack of technical know-how in an operation, that of running civic governments, which was becoming increasingly complex.²¹ New York and Brooklyn acted to reduce aldermanic authority in the 1870's and 80's and in Boston the aldermen lost control of the city's police force in 1885.²² This is not to say that Gilded Age city government was perfect. It could be corrupt, the New York aldermen of 1852 were known as the "Forty Thieves" for their profligate sale of horse car transit franchises.²³ Further, aldermen could hamper a mayor's efforts by refusing to confirm his appointments to the various executive councils.²⁴ Even so, the major public works projects of the era, sewer systems, lighting systems, mass transit and others were under the control of the mayor and his executive appointees many of

¹⁸ Jon C. Teafford, The Unheralded Triumph: American City Government in America 1870-1900, Baltimore, Johns Hopkins University Studies in Historical and Political Science: 1984. Pg. 1.

¹⁹ Jon C. Teafford, The Unheralded Triumph, Pg. 2.

²⁰ Jon C. Teafford, The Unheralded Triumph, Pg. 6.

²¹ Jon C. Teafford, The Unheralded Triumph, Pg. 15.

²² Jon C. Teafford, The Unheralded Triumph, Pg. 18-19.

²³ Jon C. Teafford, The Unheralded Triumph, Pg. 18.

whom had advanced technical knowledge. In New England cities especially, the technical people, such as engineers, appointed by the mayor enjoyed significant insulation from the winds of politics and many held their posts for years.²⁵

Another group which wielded impressive political power, but that enjoyed a shielding from some of politics harshness were clubs and associations of mostly middle and upper class people who served as urban lobbyists, drafting legislation and working hard to shape the city towards their desires. Mayoral power would often make an ally of people such as New York's Chamber of Commerce, a body instrumental in the building of the Interborough Rapid Transit system.²⁶ The urban upper classes, the Belmonts and Vanderbilts of the world, were also involved with such endeavors and saw the creation of an artful city with parks, libraries and civic cultural institutions as their personal bailiwick in the program of urban control.²⁷

Like the suburbs created with strong ideological component, urban citizens of the Gilded and Progressive ages were not just attempting to build cities that worked, although that was a major concern, but to create cities that would produce better citizens. Before delving deeper into the topic of mass transit and suburbanization, we must understand that civic government of the era in question was not a static and corrupted body, but one that was dynamic and centralizing authority in hands which were interested in more than just making a dishonest dollar, but that had a strong ideological program.

²⁴ Jon C. Teafford, The Unheralded Triumph, Pg. 42.

²⁵ Jon C. Teafford, The Unheralded Triumph, Pg. 133.

²⁶ Jon C. Teafford, The Unheralded Triumph, Pg. 187 & 190.

²⁷ Jon C. Teafford, The Unheralded Triumph, Pg. 68.

To conclude this chapter, years from the end of the Civil War to 1917 were years of immense dynamism. Intensely aware of how immigration and industrialization were changing their familiar nation, Americans sought to direct and create the society of which they were in search. Both by moving to the suburbs, a shift not just in geography but in ideology, and one that was made possible by rapid transit, and by pressures exerted by the urban middle and upper classes on civic government to produce the kind of cities they wanted. With these things well in mind Americans set out, aided by new technologies, in an effort that encompassed politics, economics and the arts to create a better world. A process that would generate mass transit and define America's cities for half a century.

Chapter Two: PreHistory of Rapid Transit In Boston & New York

During the final decades of the nineteenth century and into the dawning of the twentieth, New York and Boston underwent the rapid industrialization and foreign-born population boom discussed as an abstract phenomenon in Chapter One. For established wealthy and middle class New Yorkers and Bostonians to create the kind of cities and citizens they felt essential to the health of the American republic, decentralization and suburbanization as well as the rationalization of downtown was necessary. The revolution in electric traction, appearing in the forms of the electric street car and the elevated and submerged railroads would put the tools needed to achieve those ends into the hands which wanted to use them, but how had the situation arrived at this point? To answer this question we need to look back into history before the Civil War, and in Boston's case all the way back to the Puritans. This chapter will seek to establish something of a chronology on which to hang the more complex discussions of engineering, artistry and finance yet to come. Further, it will lay out in detail some of the problems imposed by geography on those seeking to construct transit systems in New York and Boston.

Founded by Puritans from England in 1630, Boston began its life as an island barely connected to the mainland by the narrow strip of land, termed "the neck" by early settlers. During particularly high tides, the neck was covered, and even when the natural causeway was left uncovered, the settlement was easily defensible. A spring of healthy water, now marked only by a bronze plaque on

Spring Lane in the heart of the high-rise financial district, was also central in drawing the Puritans across Boston Harbor from their original settlement in Charlestown.

According to the Massachusetts Bay Transit Authority Historian George Sanborn, Boston sports the nation's oldest public transportation system. The Massachusetts Bay Transit Authority, known as "The T" can trace its genealogy back to 1631 when the Massachusetts General Court offered a charter to anyone who would run a ferry from the Boston side of the harbor over to Charlestown. With the ferry in operation, the formerly two day travel time, through what is now Chelsea was cut down to under an hour.¹ Unlike New York, it seems that the government of Massachusetts and Boston was ready from the outset to take place in the activities surrounding mass transit. During the occasional periods of depression that attacked the colonial economy, the General Court often stepped in to run the Charlestown ferry as a state enterprise, truly public transportation.² The fact that at the outset Massachusetts was governed as a Puritan theocracy may have ultimately been beneficial to the development of rapid transit in Boston. For much of its early life, Massachusetts' assembly was concerned with creating God's community on earth, and evidently, God's community needed ferry service to Charlestown, even if it meant paying out of the public purse during lean times. Though nineteenth century transit projects in Boston had little to do with God, the willingness for the government to intervene in public transportation born during the Puritan years may have helped to secure more

¹ George Sanborn. "Chronicle of the Boston Transit System." Unpublished manuscript, ND. Pg. 1.

² Ibid

government aid and direction than was generally offered in Dutch founded New York City.

After the American Revolution, as the city began to recover from the effects of a war which had been deadly for Yankee waterborne trade, Boston experienced heavy population growth. Though the settlement on the original peninsula had been a town easily crossed on foot, Boston embarked on an aggressive land reclamation program, enlarging the city's area dramatically, and accordingly land transit became an issue.³ During the early 1800's stagecoach service to Boston's outlying communities was introduced, and regularly scheduled omnibus service, the earliest precursor of land-based rapid transit was introduced in the 1820's.⁴ The omnibus of the 1820's was a simple conveyance with lengthwise seats and a door at either end, but they did prove popular with riders.

The omnibus, however, shared a problem common with all wheeled vehicles in the era before modern paved roads: the weather. New England weather, hard on even today's most up-to-date highways churned dirt roads into mud during the spring and made them into pothole riddled obstacle courses in the summer. The first great improvement on the omnibus in Boston came in

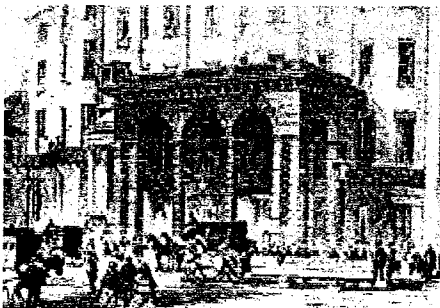


Figure 1: A Boston horse car

1856 with the introduction of the horse car in 1856. Horse cars, running on rails and pulled by a horse represented a quantum leap from the omnibus in speed, comfort and horse efficiency. A single horse could do more work, pulling

³ Ibid.

⁴ "Chronicle of the Boston Transit System." Pg. 2.

greater number of passengers at higher speeds. The line ran between Central Square in Cambridge and Bowdoin Square in Boston. Lax regulations of the horse car industry in Boston lead to problems common to the early years of mass transit in both Boston and New York. Competing lines over the same route had a reverse effect to what one might have assumed and actually drove prices up. Once again, in 1887, the General Court stepped in to prevent chaos and in that year, all of Boston's competing horse car lines were merged in the West End Street Railway.⁵

The horse car itself had serious drawbacks. Though it represented an improvement over the omnibus, it was still far from perfect. In many cities, horse car operators could not keep up the standard of cleanliness, both in their cars and in picking up after their many animals, that their charters required. Even though a horse needed to spend twelve hours a day resting in the stables, the spectacle of brutal animal cruelty haunted American cities during the horse car era. Horses that fell were generally shot where they lay and the carcasses merely pushed to the roadside. During epidemics of distemper that affected the horse population gangs of men had to be hired to prevent service from disintegrating.⁶ In New York, during the distemper epidemic in 1871, one that coincidentally helped to usher out horse cars in that city, officers from the Society for Prevention of Cruelty to Animals had to be stationed on street corners to prevent desperate drivers from working their sick teams.⁷

⁵ Ibid.

⁶ Crabgrass Frontier, pg. 106-7

⁷ Rebecca Read Shannor, The City that Never Was: Two Hundred Years of Fantastic and Fascinating Plans that might have changed the face of New York, Viking, 1988. Pg. 92.

During the early 1880's the "hot" method of propulsion in rapid transit was the cable. Cable car systems like that still in use in San Francisco existed in Washington and Chicago. The cable car system was the brainchild of Scots inventor Andrew Smith Hallidie.⁸ The cable car relied on stationary steam engines to drive a cable through a series of underground conduits that lay between the tracks plied by the streetcar. To accelerate, the car gripped the cable and was pulled along, braking was accomplished by releasing the cable and applying simple brakes to the car's wheels. The cable car had significant advantages over the horse car, including better hill-climbing abilities, greater speed, no cruelty to animals, and no offensive manure. The creation of suburban Chicago between 1885 and 1894 can be largely attributed to this technology, which in some cases proved to be highly successful. Nevertheless, cable technology had serious limitations especially in a city like Boston. The capital needed for converting an already large and well-established network of horse cars to cable cars was a major hurdle. There was also no way to adjust the cable's speed for rush and off-peak hours, causing the system to be especially wasteful of power. Worst of all, run-away accidents were common events in which the car would fail to release the cable and be dragged dangerously through traffic.⁹ In Boston, snow and ice would have fouled the cable's conduit and the frequent turnings of Boston streets would have placed extra stress on the cable resulting in line-crippling breakdowns.¹⁰ Cable, though the prominent motive power in the early 1880's, was clearly not a solution for Boston. Ultimately, Boston's

⁸ Kenneth T. Jackson, Crabgrass Frontier: The Suburbanization of the United States, New York, Oxford University Press: 1998. Pg. 104.

⁹ Crabgrass Frontier, pg. 105.

¹⁰ "Chronicle of the Boston Transit System." Pg. 3.

search for a form of motive power friendly to local conditions would end when Henry Whitney, a steamship mogul who had purchased the West End Street Railway journeyed south to Richmond Virginia to see the work of Frank Sprague, the inventor of multiple unit control, or MU.¹¹

Various schemes for using electricity to power trains had been afloat since at least 1880. Thomas Edison had attempted to electrify a small line built on his property in Menlo Park, New Jersey, but unlike some of his other efforts, met with little success. In 1883, Englishman Leo Daft electrified a stretch of horse car line using his small electric locomotive *Ampere*, to tow horse cars. *Ampere* had one major difficulty in that its exposed, street-level third rail was the death of many small animals, the carcasses of which littered the route. In 1884 Edward Bently and Walter Knight invented the conduit system. In which a "plough" extended from the bottom of the streetcar contacted a set of live wires placed in a covered trench, but the conduit system suffered when the weather was less than perfect, certainly a prerequisite for operations in either Boston or New York. The years 1886 and 1887 would be central for the future development of rapid transit. In 1886, Charles Van Depoele would use an overhead electrified wire to power converted horse cars in Montgomery, Alabama. The following year Frank Sprague, a one-time navy officer perfected a system which came to be known as Multiple Unit Control in which two, or several electrically powered, independently operating rapid transit cars could be operated as from one portion of the train. This in effect, rendered the trailing cars passive, but still lent their power towards moving the whole train forward.¹² Richmond Virginia briefly

¹¹ Crabgrass Frontier, pg. 109.

¹² Crabgrass Frontier, pg. 107-8.

became the Silicon Valley of the 1880's with horse car barons like Henry Whitney arriving from all corners of the country. In what was perhaps an ill omen, Sprague lost more money promoting and creating his invention in Richmond than he made. Though he eventually recovered his losses by obtaining a patent on MU and equipping many cities and towns with the technology, his original loss is telling considering what would later happen to the streetcar industry.¹³ Electrification and MU was the great breakthrough, which allowed cheap mass transit to become reality. The alternatives of cable and horse cars were far more capital-intensive, and electrification plus MU allowed streetcars to reach speeds of 10 and 15 miles per hour in traffic and 20 miles per hour over open track. Fares dropped from 10 cents to 5 cents, and mass transit was suddenly within the budget of the working class individual.¹⁴

Boston would see its first electrified line, built along the Sprague method, in 1887 under Whitney's direction. The line ran down the center of fashionable Beacon Street from Boston to Brookline, and is still in use today as a branch of the T's Green Line.¹⁵

Electric street traction proliferated quickly in Boston. The city's narrow streets, high density downtown, rolling glacier induced hills and valleys and well established residential areas all force traffic into a funnel on Tremont Street in downtown Boston. The "sacred" spaces of the Boston Common and the Public Garden, were inviolate as far as Bostonians were concerned and could not be used for rapid transit rights of way, though some suburban legislators did

¹³ Crabgrass Frontier, pg. 108.

¹⁴ Crabgrass Frontier, pg. 109.

¹⁵ "Chronicle of the Boston Transit System." Pg. 3.

suggest this as one way to alleviate congestion.¹⁶ By 1891 Tremont Street was congested to the point that vehicles including horse drawn carriages, commercial wagons and streetcars that traffic frequently ground to a complete halt. In 1894 a special commission was appointed by the governor to study how best to reduce rapid transit's obtrusive presence in city while continuing to make it available to those travelling in and out of downtown. The plan handed back to the governor by the commission included a tunnel under Tremont Street and four elevated railroads radiating out from the central city. It is interesting to note that ultimately this would be if not in form, as some lines were realized as subways, but in spirit the outcome for Boston's rapid transit system. The state created a company to operate the elevated lines, dubbed the Boston Elevated Railway Company, or BERY.¹⁷ The BERY was privately owned and operated. It was to construct tunnels and elevated rail systems at the recommendation of the transit commission as well as profit its stock-holders.¹⁸ The West End Street Railway had, by this point, alienated its customers and fallen into financial difficulties, the Transit Commission accordingly leased the West End's facilities to the BERY, placing all of Boston's transit systems under unified private control closely overseen by the government. The future advantages for Boston in having such unified control with government supervision cannot be exaggerated.¹⁹ Though the BERY would continue to expand its facilities for the next forty years, the company would encounter financial problems in May of 1919. The Transit

¹⁶Cynthia R Zaitzevsky, Historical Documentation: Boston Elevated Railway Company Washington Street Elevated Mainline Structure (MBTA Orange Line.) Washington, DC: Kaiser Engineers, Inc./Fay, Spofford and Thorndike, Inc, 1987, pg. 13.

¹⁷"Chronicle of the Boston Transit System." Pg. 4.

¹⁸"Chronicle of the Boston Transit System." Pg. 5.

¹⁹Ibid.

Commission once again stepped in, and appointed five public trustees to oversee operations. Though the fiction of private ownership was still kept, Boston's transit system was effectively in public hands by 1920.²⁰ Throughout Boston's mergers, the surviving company had routinely taken on huge debt burdens. The 1890's had been a deflationary period when debt could be amortized by the transit companies. However, the dawn of the twentieth century almost immediately brought on inflation causing significant difficulties which private transit companies never really managed to solve.²¹

New York, with its greater scale and different geographical makeup presented another series of challenges to those seeking to establish transit systems. Though New York was easier to build in than Boston, being laid out on a grid, the distances involved raised serious issues which made omnibus and horse car service even less satisfactory than in Boston, especially after the Civil War. Horse car companies, many of them the pets of Boss Tweed the notoriously corrupt Tammany Hall boss, could only offer their disgusted riders hour-long rides from the Battery to Forty Second Street.²²

Some of New York's earliest transportation experiences at the passing of the eighteenth century, such as ferry service to Brooklyn, have been described in the previous chapter. Accordingly, we begin not with Manhattan's earliest European settlers as we did in Boston, but with New York's post Civil War crisis in density. Between 1870 and 1915, New York's population grew faster than any city in existence before 1800. Even into the later nineteenth century, much of New York's population and manufacturing was clustered below Fourteenth

²⁰ "Chronicle of the Boston Transit System." Pg. 6.

²¹ Crabgrass Frontier, pg. 109.

Street causing ultra-high densities. New York's population boomed in a large part due to the influx of Europe's poor immigrants that arrived through the famous Ellis Island. Their numbers increased dramatically; in 1882 648,000 immigrants arrived in the city, by 1907 that number was 1.2 million. In 1905, the immigrant-dominated Lower East Side had 260,000 people per square mile.²³ This was the kind of density which men like Robert Ward, Dr. Bushee and a generation of established wealthy Americans found so distasteful and destructive. In 1894, a state appointed committee on tenements felt that the only way to clear such dangerous slums was the creation of rapid transit systems linking downtown with the suburbs.²⁴ A subway to augment the system of elevated railroads, created in the 1870's and 1880's and electrified streetcar service, was judged to be essential. However, there was significant worry over how the system would look and function and who would pay for it.²⁵ Despite the appointment, by Mayor Hugh Grant, of a Rapid Transit Commission composed of five businessmen, a depression through the 1890's put the development of the New York Subway system on hold.²⁶ It is important to note here that Grant's choice of five businessmen, private citizens, not politicians of any sort, were chosen to make up the Transit Commission. Such a choice supports the suggestion that upper middle class people were heavily involved in the upper echelons of rapid transit creation. As in Boston, a balance between public and private was struck, though for different reasons. No single private company was willing to take on the job of building a submerged mass transit

²² Sir Peter Hall, Cities in Civilization. New York, NY: Random House, 1998. Pg. 757

²³ Cities in Civilization, Pg. 746-9

²⁴ Cities in Civilization, pg. 753.

²⁵ Cities in Civilization, pg. 764.

system for New York, but in general people viewed public control with suspicion, remembering how it had been with Boss Tweed's horse car franchises. Other political stumbling blocks remained in the way of Mayor Grant's committee. Between 1896 and 1900, Tammany Hall partisans were able to block subway construction, and only an order from the Supreme Court of New York State was able to remove their resistance. Further, the consolidation of New York's boroughs into one larger polity meant New York, in this case the part of the city on Manhattan Island, taking on the debt on Brooklyn and the other boroughs.²⁷ Once these obstacles were cleared, a deal was reached in which the city would construct transit facilities, amortizing the resultant debt with a sinking fund, and a private company would equip the tunnels and stations; it would also operate the trains. When the original winner of the bid to be that private company lost his backers the city almost saw the project put on hold again. Luckily, August Belmont, Jr. a member of the American branch of the Rothschild banking family stepped in with vast financial resources to become New York's sought-after private operator.²⁸ Ground was broken for the Interborough Rapid Transit System, or IRT in 1900. The IRT was expanded before it was even completed, with an extension into the Bronx being added in 1902. As in Boston, consolidation was the norm, and by 1906 Belmont controlled all subway, street and elevated service in Manhattan and the Bronx.²⁹ A subsidized five-cent fare drew heavy ridership and by 1910, the formerly sparsely settled Bronx had 400,000 commuting inhabitants. In its early years,

²⁶ Cities in Civilization, pg. 764.

²⁷ Cities in Civilization, pg. 765.

²⁸ *Ibid.*

²⁹ Cities in Civilization, pg. 766.

much like the Boston Elevated Railway Company, the IRT managed to keep a delicate balance between private profit and public needs, but this would only work so long as the mass transit boom in New York held.³⁰ The end of solid profitability under private ownership for the IRT began in 1913 when the BRT, the competing system from Brooklyn attempted to invade Manhattan and compete on the IRT's home island. In an active governmental move, reminiscent of the General Court in Massachusetts, the city government of New York stepped in and created the dual contract system. The city's debt ceiling was raised by a special act of the state legislature to perform the complex and expensive undertaking of the dual contract system. The dual contracts allowed each competing system to retain control in their respective home boroughs, and would be allowed to invade their rivals territory at certain government sanctioned points. In the end, the dual contracts would essentially result in the IRT's extension to Brooklyn, the BMT's extension to Manhattan and a third subway system, which mirrored the two already in use. As early as 1919, financial difficulties began for both companies.³¹

The vision of the electric streetcar and other forms of rapid transit including elevated railroad and subway systems as essential components for a modern, progressive, city or town permeated not only Boston and New York, but the country as well. I know from personal experience that in the early 1900's Sturbridge, Massachusetts boasted an electric streetcar. It is doubtful that Sturbridge ever had the density to make a streetcar profitable, but nobody, in the

³⁰ Cities in Civilization, pg. 767.

³¹ Cities in Civilization, pg. 768.

1900's wanted to be without rapid transit.³² It was THE thing, much as was the Internet to the 1990's. The electrification of rapid transit was a commercial and urban revolution. Traction companies established beaches, amusement parks and beer gardens at the ends of their lines. These served not only to keep peripheral tracks making a profit, but also to take urban dwellers past land for sale by the streetcar company.³³ Rapid transit can be seen as a genesis of the industrial era "hub and spoke city" in which transit radiates out from the urban center to homes on the periphery. Traction companies building on this pattern, while ignoring cross town lines helped to cement the location of downtown in many cities, a location which had been especially mobile in pre Civil War Boston, and to a lesser degree, because of geography in New York.³⁴ The end result would be a distinctly American city. In opposition to Europe where rich and poor, commercial and residential were mixed, American cities following the Civil War would develop in ways which segregated all of the above mentioned elements into their distinct areas.³⁵ As was mentioned in the previous chapter, people accepted rapid transit as an agent of good morals. The trolley, subway and elevated could remove the poor immigrant from his slums where he dwelt as some sort of Papist Morlock and send him to suburbia where could own a home and realize what it was to be a patriotic American. The influence of electric rapid transit cannot be overemphasized. In Boston, between 1890 and 1900, the population of Medford, a prime streetcar suburb grew from 11, 000 to 23, 000.³⁶ Henry Whitney, the man who had bought Boston's West End Line considered

³² Crabgrass Frontier, pg. 111.

³³ Crabgrass Frontier, pg. 112.

³⁴ Crabgrass Frontier, pg. 113.

³⁵ Crabgrass Frontier, pg. 115.

perpetual expansion to be essential to turning a profit. According to Whitney as long as rapid transit continued to expand, people would enjoy greater access to the center city, thus boosting ridership. However, like the Internet revolution of the 1990's, the electric traction revolution was played out by the years immediately following World War One. Line extensions into areas of low density failed to draw riders, more comfortable trolleys riding over smoother roadbeds only left traction companies with more debts to pay back. Following WWI, ridership just did not appear.³⁷ The influence of the car cannot be exaggerated in the reversal of electric traction's fortunes, but things within the traction empires themselves had also lead to their undoing. The subsequent chapters will devote themselves to what happened during the lush boom years of privately owned rapid transit to create the cities we know today, as well as sewing the seeds for ultimate retrenchment of the traction industry.

³⁶ Crabgrass Frontier, pg. 118.

³⁷ Crabgrass Frontier, pg. 169.

Chapter Three: Rolling Artistry and Buried Masterpieces

As mentioned earlier in this paper, the post Civil War arrival of unprecedented numbers of immigrants in America's cities provoked a response on the part of established white citizens that worked on many levels. The immigrant brought with him strange ways and customs, which rankled and frightened not only native-born Americans, but also people such as America's German population, who had been immigrants themselves but a generation before. The new arrivals spoke a variety of languages and crowded into port cities like Boston and New York. Here they lived in densely packed tenement neighborhood, often in conditions of squalor that shocked Yankees and left them wondering what, if these were to be their new countrymen, what the fate of the republic might be.

Coinciding with the massive infusion of poor foreigners, America itself experienced unprecedented growth of her cities and in the wealth of a small portion of her citizens. With cheap immigrant labor, fortunes were made in heavy industries such as railroads, steel milling and coal mining, and eventually rapid transit. However, with the immigrant came a profound unease over the new arrivals and the changing qualities of American life within the nation's native born citizens. Coupled to the idea that America could no longer be a backwater when it came to ideas of culture and sophistication, America's wealthy and middle class, proved themselves intensely susceptible to the various artistic movements, which swept through America during the Gilded and Progressive eras. Tracing these artistic currents and their effects, this chapter will trace the effects of three artistic

movements on the emerging field of rapid transit, as one aspect of America's all out effort to assimilate new arrivals from abroad.

The Gilded Age, running roughly from the end of the Civil War to the late 1880's would play host to the exotic Aesthetic style, championed by Oscar Wilde, and the Victorian Gothic touted by architectural heavyweights such as Henry Hobson Richardson or John Ruskin. The Progressive era would usher in Beaux Art Classicism as envisioned by the builders of Chicago's 1893 Columbian Exposition, better known as the White City. To each of these architectural and artistic movements, America's wealthy and middle class would ascribe a philosophy, philosophies which, in turn, they deemed to be king's cures for America's social ailments. Between Lee's surrender in Virginia and General Pershing's arrival in France, art was no small matter in America. Art had the power to change people, especially people of questionable moral fiber, like the immigrants from southeastern Europe for the better. Oscar Wilde, the high priest of Aestheticism thought that bad wallpaper would drive a boy to a life of crime and good wallpaper would surely make him a model citizen,¹ and millions of earnest, well-meaning Americans believed it with him. Aestheticism eventually fell into disrepute. The movement was not killed, but tainted by Wilde's homosexuality. With the decline of Aestheticism America turned away from the blurred gender lines of the movement towards the re-emergent manly aspects of the Beaux Art City Beautiful program, Americans continued to believe that artistry was morally instructive and could be used to make people good. For half a century, the homes of those who could afford it, and anything open to the

¹ Matthew Sturgis, "The House Beautiful: Oscar Wilde and the Aesthetic Interior: Geffrye Museum, London." London, UK: World of Interiors Vol. 20, No. 8, 2000, Pg. 108-109.

public strove to incorporate the latest art trend because it was what people needed to be good members of society.

It is small wonder then that impressive works of art would be placed into the very structures and conveyances, which were to make model Americans out of all those questionable immigrants. In New York, the elevated railroad incorporated Eastlake Gothic into its station and car design. When the first leg of the New York subway was built, under August Belmont, its decorations were distinctly Roman and Greek, taking their cue from the White City of the Columbian Exposition. In Boston, when the Elevated Railway Company began to decorate its platforms it sent representatives to Vienna and came up with a blend of Art Nouveau and Beaux Art Classicism which was at the height of fashionable taste, perhaps even avant garde.

In both Boston and New York, the horse car appeared as the first step towards mass transit. An improvement over the horse drawn omnibus, which was subject to the bumps and mud of nineteenth century American roads, the horse car ran on tracks and followed a gently fixed schedule. Split second timing was not their forte, but horse cars were reasonably dependable, especially in the decades leading up to the Civil War. After the conflict, with New York spreading onto the Brooklyn and New Jersey shores and struggling to move north up Manhattan, and Boston reclaiming land from the sea at a rapid pace, horse car routes became longer and their inadequacy painfully apparent. According to Suellen Hoy's book on the American quest for cleanliness, Chasing Dirt, each horse made on average twenty-two pounds of manure every day.² Longer routes and hours on the road only served to highlight that life for a horse car horse was far from humane. Animals were

² Suellen Hoy, Chasing Dirt: the American Pursuit of Cleanliness, New York, Oxford University Press: 1995, Pg. 13.

often subject to abuse and forced to work even when sick to prevent service from disintegrating. Horse cars were poorly ventilated in the summer and freezing in the winter. The *New York Herald* defined a ride on a horse car as an "act of modern martyrdom" and the conveyance itself as "bedlam on wheels."³ In New York City, the horse car industry was the darling of the crooked William Marcy "Boss" Tweed, who enjoyed hefty kickbacks from horse car companies and thus bad service enjoyed government protection.⁴ As was mentioned in the previous chapter, in Boston, free competition between lines, thought to produce better quality service, had instead led to over duplication of lines. Many companies were unable to live up to the promises of speed and cleanliness promised in their charters with the state of Massachusetts.

In artistic terms, most horse cars systems were plain in comparison to transportation systems of the later nineteenth century. Horse cars operated without fixed depot buildings and accordingly could not decorate such structures. Further, most cars themselves were plain, they might be painted a single bright color or feature fancy script for the destination boards, but over all they were not splendor on wheels. This lack of ornamentation can be traced to two things. One, prior to the Civil War, art had not taken on the philosophical qualities that it would afterwards and two, the steam railroad companies from which city transit organizations took their cue were still running trains, even overnight runs, with very few frills during the 1840's and 50's. One notable exception was Boston's Highland horse car line, which ran from downtown, via the newly reclaimed Back Bay, and into the Roxbury

³ Rebecca Reed Shannor, The City that Never Was: Two Hundred Years of Fantastic and Fascinating Plans that might have changed the face of New York City, Viking, New York, NY, 1988, Pg. 85.

⁴ Shannor, The City that Never Was, Pg. 88.

highlands. The Highland line boasted the best equipment in Boston with drivers liveried in similar uniforms to the United States Postal Service of the era as well as tartan painted cars with Scottish scenes or portraits of Massachusetts' governors emblazoned on the flanks of their vehicles. However, this arrangement was far from commonplace and it is doubtful that the Highland was attempting any moral agenda with its decorative scheme, but merely trying to outdo competitors with decorations, accordingly, the line went bankrupt and was absorbed by a parallel system.

During the Civil War, American cities experienced significant growth, not only from foreigners who worked in defense jobs, and served in the ranks of especially the Union armies, but also with rural Americans displaced by the conflicts that had embroiled the nation. This influx of people was what originally began to point out the shortcomings of the horse car system and began to push inventors and speculators towards mechanical mass transportation solutions. The closure of the war coincided with first of the artistic movements germane to this discussion to arrive in the United States: Aestheticism.

Aestheticism was a novel departure from earlier forms of art in that it required no innate moral lesson to be considered beautiful, rather, the morality of aestheticism was contained in its beauty. It was art for art's sake and in this aspect can be considered truly modern. The champion of the Aesthetic movement, both in America and Europe was the novelist and playwright, Oscar Wilde.

During his popular lecture tour of America, Wilde upon viewing Washington, D.C. pronounced that American had, "too many bronze generals on horseback" and that the American people should turn their backs

on their warring ways and take up the gentler arts of peace.⁵ Many Americans seemed willing to travel Wilde's road with him. The chief aesthete clad in velvet knee breeches and patent leather slippers, carrying a sunflower with him wherever he went was far from the manly ideal of the American citizen as citizen soldier drawn from the American Revolution or the War Between the States as one could have asked for. During the aesthetic era, President Grant's memoirs were published, in which he confessed his abhorrence of war and his pity for wounded men and animals. Oliver Wendell Holmes once a staunch Union partisan in the Civil War also turned his back on armed conflict.⁶ Paintings by Winslow Holmer, contemporaneous with the aesthetic movement in America show Civil War veterans as anonymous figures, or crippled and dependent on strong female caretakers.⁷ The "manly" men of the 1870's and 80's in America were also somewhat feminized. General George Custer favored uniforms of his own design with red trim and plenty of lace. Buffalo Bill also favored fringed costumes and like Custer had curly locks cascading down over his shoulders. By 1876, the year of the Philadelphia Centennial Exhibition when Aestheticism in the United States would reach its height the Grand Army of the Republic, the fraternal organization founded by Yankee Civil War veterans at war's end had withered. The 1876 membership of only 26, 899, was a fraction of those who had held membership in 1865.⁸ An 1882 men's sporting journal, the pages of which are nowadays filled with paeans to such manly figures as policemen, firefighters and Army Rangers, decried soldiers

⁵Mary Warner Blanchard, Oscar Wilde's America: Counterculture in the Gilded Age, Yale University Press, New Haven and London, 1998, pg. xii

⁶Oscar Wilde's American, pg. 5.

⁷Oscar Wilde's American, pg. 6-7.

⁸Oscar Wilde's American, pg. 6-7. This fact is confirmed by G. Kurt Piehler on page 57 of his book on Americans commemorating conflict, Remembering War the American Way.

as drunken womanizers with no connection to the spirit of '76. The Seventh New York Regiment Armory built in 1879 featured a "veterans room" entirely devoid of martial imagery and conceived as an oriental harem.⁹ Clearly, the idea of men as the military captains of society was in eclipse, and women were showing themselves to be able to hold positions of strength and determination. With the submersion of typical gender roles as encouraged by the Aesthetic movement, both men and women blurred the lines between their previously well defined spheres and actively experimented with the idea of male or female identity and that of androgyny.¹⁰ In some aspects Aestheticism is hard to pin down. According to Lee Glazer, it was a mixture of wanderlust and homesickness and a desire to leave behind industrial revolution brutality by submerging it in beauty.¹¹ Aestheticism penetrated all levels of society, but coming from the wealthy down. In this aspect, Aestheticism had a kind of Henry Higgins approach to the poor and ignorant in that it felt that enough art would certainly make them genteel and noble.¹² John Ruskin a famous architect and tastemaker who subscribed to some of Aestheticism's doctrines saw the reform undertaken by the movement to redefine beauty as "co-terminus with social reform."¹³ From this we can see that those at the cutting edge of art in this era certainly felt that "The Masses" could understand art and that it was good for them.

What were the consequences of these ideas in artistry and especially architecture? Importantly, the aesthetic home and especially such focal points like the parlor became chock-a-block theater sets featuring anything Moorish,

⁹Oscar Wilde's *American*, pg. 26.

¹⁰Oscar Wilde's *American*, pg. 10-11.

¹¹Lee Glazer, "Aestheticism in Anglo-American Culture," *Nineteenth Century Studies*, Vol. 13, 1999, Charleston, S.C, pg. 194.

¹²Lee Glazer, "Aestheticism," pg. 196.

¹³Lee Glazer, "Aestheticism," pg. 198.

Japanese, Byzantine or vaguely Renaissance, the more the better, for the smoking of then legal opium and the investigation of exoticism.¹⁴ Men such as Stanford White, of the famous architectural team of McKim, Mead and White, gave in to decorating his entire New York apartment in aesthetic reds and salmon pinks, something this famous practitioner of the Beaux Art tradition would later never even consider following the reaction against aestheticism in the 1890's.¹⁵

Returning to our discussion of rapid transit, the reader should take from this detour in the realm of artistic theory that Aestheticism was an art movement, drawing on diverse thematic elements from a multitude of cultures to create an atmosphere that was dreamy, exotic and gentle on the senses. However, Aestheticism also carried a philosophical component, one of beauty for beauty's sake being a morally improving agent and that art was serious business and had to be manipulated carefully to produce the correct result. It also held out the promise of a world liberated from traditional gender strictures and was embraced by a war weary America. As we will see shortly, these theories applied to rapid transit would culminate in one of the greatest legends of underground New York City.

Alfred Ely Beach was the son of a wealthy New England family. His father was founder of the influential working class New York daily, *The New York Sun*. Alfred's upbringing was rigorous, nothing about it hinted at the fact that his family was well-to-do and when young Alfred was not studying at Monson Academy in Massachusetts, he was working rank-and-file jobs at his father's paper. At the age of twenty-two, Beach came into his inheritance and the management of *The Sun* was passed to him and his brother Moses.

¹⁴Oscar Wilde's American, pg. xii

¹⁵Oscar Wilde's American, pg. 24.

Moses and Alfred expanded their father's publishing empire and wealth through the addition of *The Scientific American*, *The Ladies Home Journal* and the agriculturally oriented *People's Journal*.¹⁶

From his lower Manhattan office in the top of the nine story Sun building, Beach could see the site of New York's worst congestion: Lower Broadway. When the reader thinks of this piece of street, they should think of it as the archetype of urban congestion, which established white Americans such as Beach wanted to be rid of. Every weekday, traffic ground to a halt as horse cars, wagons; pedestrians and wild pigs, which survived on New York's copious garbage, all attempted to travel north and south. Often times the street degenerated into a brawling melee and the police had to be called to remedy the situation, usually by cracking unruly skulls with their batons.¹⁷ In 1849, Beach had proposed a tunnel below Broadway, lit by gas and carrying a horse car line, but the proposal had languished for want of public interest. In the late 1860's, Beach gave a demonstration of the transit system, which would eventually make him famous. His demonstrator model was exhibited during a show at Fourteenth Street Armory and sat passengers in a tubular plywood car. The car was shunted into a pressurized tube and then sent whizzing around the exhibition hall. Beach used his publishing acumen to create and mass-produce simple tracts which praised his transportation system as the wave of the future and "swift as Aeolus, silent as Somnus."¹⁸ In his choice of words, Beach showed himself to be aware of Aestheticism's cache with potential riders. Not only did he draw on exotic classical personifications to express the speedy and silent nature of his pneumatic

¹⁶Benson Bobrick, *Labyrinths of Iron: Subways in History, Myth, Art, Technology and War*. New York, NY, Henry Holt and Company, 1994, pg. 171.

¹⁷*Labyrinths of Iron*, pg. 171.

¹⁸*Labyrinths of Iron*, pg. 184.

transit system, but he also chose ones which were gentle, Aelous, the god of breezes and Somnus, the god of sleep and dreams. Given the aesthetes proclivity towards dreamy meditations on the exotic, sometimes aided with a dose of opium, it is clear that Beach hoped he was reaching this element in society.

Beach's colleges in the news field gave him plenty of support and soon several of New York's prominent papers were suggesting that pneumatic elevated railroads would soon be doing away with the chronic congestion of places like Lower Broadway. Beach's efforts were not to be easy. Boss Tweed, a man more different man than Beach could not easily be found, had publicly promised to defeat any measure which might encumber the horse car system, a system which was in his pocket.¹⁹ Beach however, proved wilier than Tweed, and going before the city council brought forth his proposal to build a pneumatic subway disguised as a pneumatic postal system running between Warren and Cedar streets on Lower Broadway. The containers used by the system were far too small for a person to fit inside of, and thus the measure was allowed to pass. Beach then asked for an amendment to his charter, in the interest of cost and efficiency he asked the council to allow him to build one large tunnel rather than the two small ones shown in the plans he had shown to the aldermen. With seemingly little opportunity in the scheme for graft, Tweed's allies let the second measure slide through as well.²⁰

Once granted permission, Beach began his veiled effort to produce a pneumatic transit system for New York City. Working from the basement of Devlin's Clothing Store at the corner of Warren and Broadway, and using his own son as foreman, Beach's workmen, sworn to secrecy began to tunnel

¹⁹Labyrinths of Iron, pg. 185.

²⁰Labyrinths of Iron, pg. 185-6

towards Cedar Street. The soil was soft, mostly sand and pebbles and using a tunneling shield devised by Beach himself, the work went smoothly, taking fifty-eight nights, during which the excavated soil was removed in carts with muffled wheels. The sound of passing carriages on Broadway was decidedly unnerving for Beach's crew, unaccustomed to underground work in a bustling city, but the roof held. Only one major obstacle to the work cropped up which was the stone foundation of an old, Dutch fort. The removal of this, it was feared, might collapse the tunnel, but after gingerly removing the blockage, stone by stone, the work progressed as before.

Beach had successfully circumvented Tweed. His original city charter was redeemed through the construction of a pneumatic postal system that ran between the Warren and Cedar Street stations, leaving Tweed with little room to maneuver. The line opened on February 28th, 1870, having cost \$70,000 of Beach's own money. The pneumatic subway was an immediate cause celebre and a triumph of aesthetic philosophy and artistry. Regardless of whether Beach subscribed to any of the principles of aestheticism, he certainly understood them and served them up to his public in style. The tunnel through which the train traveled was whitewashed from end to end, and lit by oxygen-zircon lamps, then at the cutting edge of lighting technology and touted for their light which was strong, yet gentle. The zircon lamps, which lit both the train car and some of the platform, allowed Beach's patrons, to see the true colors of the frescoes, which adorned the station's walls. In the artistic spirit of the times, Beach was determined to make his station exotic and beautiful, even going to great lengths to install the very newest in lighting to ensure that his decorations were seen.²¹ The Warren Street platform had other impressive artistic touches to boast of. Rather than

²¹Labyrinths of Iron, pg. 188.

the indestructible benches on which subway patrons await their train in the early 21st century, Beach pampered his riders with richly upholstered chairs and sofas. Damask curtains covered blind window niches along the walls and oilcloths covered the floors. How Beach thought these cloths would hold up to the press of customers he expected to get is unclear, but what is apparent is that in putting them on the floor, Beach was keeping pace with one of the key trappings of the Aesthetic movement: the Moorish Corner. The Moorish

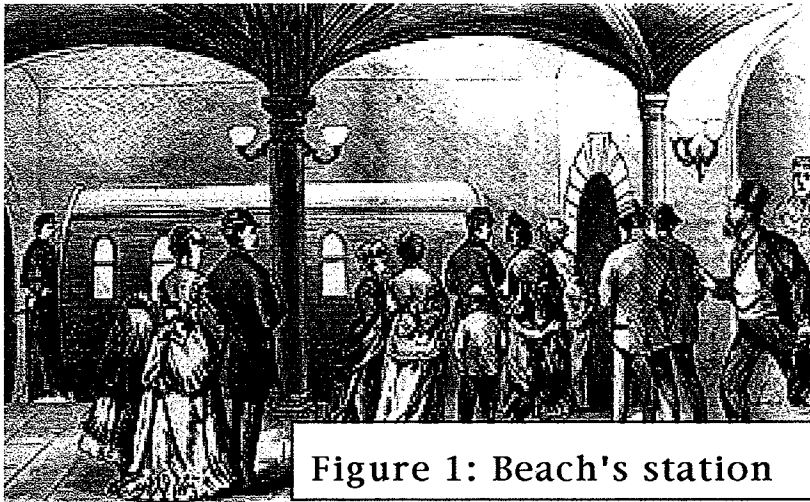


Figure 1: Beach's station

Corner was a quick and easy way of bringing something of the exotic orient into a middle class home. The aspect of the Moorish Corner was not lost

on reporters who covered Beach's masterful subway. The gentlemen of the press quickly dubbed the pneumatic subway, "Aladdin's Cave."²² Aside from these splendors, the station featured a grand piano, a fenced off "ladies waiting room" and a fountain filled with goldfish.

The Beach Pneumatic Subway was also aesthetic in terms of its mechanical plant. The train car used, seating a maximum of twenty-two passengers was round and featured heavily upholstered bench seating. Pushed through the tunnel by a giant reversible fan that blew the car north up Broadway and then sucked it back south from Murray Street, the pneumatic car could have made sixty miles an hour. However, Beach kept speeds low, not wanting to frighten anyone and thus the car traveled at only a

²²Labyrinths of Iron, pg. 189.

tenth of the speed that it could have. The fan itself was dubbed "The Western Tornado."²³ Along with the mighty stationary steam engine which powered it, the pair made up a marvel of the industrial revolution, but it was kept out of site and mind and instead the little car moved through the tunnel quietly and gently, like, "a sailboat before the wind."²⁴ Here, even the method of propulsion was Aesthetic, neither a horse nor a steam engine, which were part and parcel of life in the 1870's, but pneumatic power which must have seemed like magic to Beach's patrons.

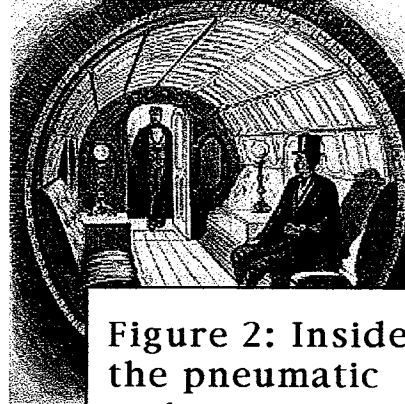


Figure 2: Inside the pneumatic train

Beach went beyond hiding the noisy industrial dragons that powered his underground jewel and decorating his waiting room to the height of fashion. He also understood how the Aesthetic movement had made people delicate. They simply could not be expected to march into a dark hole like the Union soldiers assaulting Petersburg just to go to work every morning. In his literature, Beach made certain to tell people that travelling by pneumatic tunnel was healthy, in fact healthier than standing on a city street.

Sadly, Beach's subway failed. Despite initial public support, once the novelty wore off, people stopped coming. Beach never made back his investment as he had thoughtfully donated all the profits of his demonstrator model to the Union Home for Orphans of Soldiers and Sailors. Boss Tweed who was unable to take revenge on Beach through the courts was ultimately able to apply pressure in the state legislature to block any expansion of Beach's system. In 1874, Beach had the tunnel sealed and the pneumatic railroad was

²³Labyrinths of Iron, pg. 188.

²⁴Labyrinths of Iron, pg. 188.

forgotten until 1912 when it was discovered by workmen digging a BMT subway tunnel under Broadway.²⁵ In terms of making his dream into a city wide rapid transit system Alfred Beach was a failure. Frustrated not by technological limitations but political ones, he was ultimately stymied by Tweed. However from the point of view of artistry in transportation Beach set an important precedent. In building a subway that was solidly in line with Aesthetic principles Beach cemented the idea that art belonged in rapid transit, not only to make people feel comfortable, but in an Aesthetic concept that would linger after the movement had been discredited that art could be instructive. From Beach forward, some sort of artistic program would be paired with all future transit schemes to grace New York and eventually Boston.

One of the ways that Boss Tweed had ultimately defeated the wily Beach was by taking advantage of the changing currents of thought regarding transit solutions for congested cities. Though it would eventually come to be regarded as blight on cities, as Beach's pneumatic tube was passing into



Figure 3:
Pneumatic El

history, elevated railroads were being touted as the wave of the future. They were certainly cheaper to build than subways, and despite Beach's success, there were still fears that tunnels could bring buildings crashing down. One elevated scheme proposed by Tweed himself, with massive chances for graft, was the "Viaduct Railway" which was to

have run along the length of Manhattan on stone arches forty feet high.²⁶ Another proposed elevated system; artistically important, but also never

²⁵Labyrinths of Iron, pg. 190.

²⁶The City that Never Was, pg. 88.

realized was Dr. Rufus Gilbert's pneumatic elevated train. Gilbert's proposal combined the "aesthetic" propulsion of compressed air and the emerging style of Victorian Gothic. In Gilbert's plan, the pneumatic tubes rested on cathedral like arches over the street, the arches were in turn supported by Corinthian columns which anchored the structure to the ground. The *New York Times*, which must have still had a soft spot for the Beach system raved that Gilbert's proposal would become, "the pride and boast of people riding along the line."²⁷ The artistic principles may have been fashionable, but Gilbert would have to wait a few more years before leaving an indelible stamp on the New York transit scene.

Victorian Gothic is a multi-faceted phenomenon. It has deep roots and ramifications within American society, certainly more pervasive than Aestheticism. For both Christianity and Judaism, the two religions best represented in 19th century America, the family is central. During the 18th century, family life, and especially private family life had greatly expanded, becoming a bulwark and refuge from an increasingly fast and complex world.²⁸ In 19th century America, the family was essential to caring for the soul and the soul of the republic, a good home made for good people, it conferred morality upon the owner, it was the best counterpoint to the rootless life of the urban dweller.²⁹ Country homes, along with rural cemeteries and parks were all encouraged both before and after the Civil War as the best way to produce moral people. Tastemaker Andrew Jackson Downing hated cities and advocated moving to the country for both the health and morals of one's family. Downing's essays were particularly

²⁷The City that Never Was, pg. 92.

²⁸Kenneth T. Jackson, Crabgrass Frontier: the Suburbanization of the United States. New York, NY, Oxford University Press, 1995, pg. 47.

²⁹Crabgrass Frontier, pg. 49-50.

popular with the American middle class who would follow his advice in droves. Kenneth Jackson describes Downing's ideal communities as "English country towns without the compactness," and in these planned communities, Downing placed Victorian Gothic homes. As Jasper Cropsey, the architect responsible for the creation of Victorian Gothic stations along New York's first successful elevated line would say,

"The man of sentiment or feeling and the man of imagination are the men for picturesque villas, country houses with high roofs, steep gables, unsymmetrical and capricious forms."³⁰

What Cropsey describes is American Victorian Gothic, and in his mind, it was clearly equated with producing good people. As with Aestheticism, this style too attempted to redefine beauty and broadcast it to a wide audience in hopes of making as many moral beings as possible.

American Victorian Gothic, also known as Eastlake style for Charles Eastlake, yet another tastemaker and architect who was enamored of it, involved heavy, dark woods, geometric carving a loose basis on the handicrafts of the Middle Ages. However, as we shall shortly see, the style was quickly adapted beyond any pretense of medieval artistry and applied to the very modern problem of rapid transit.

The first elevated railroad to operate in New York City was the creation of Charles T. Harvey and it opened in 1869. The line was prototypical in many aspects and as such never enjoyed the upscale decorative treatment afforded to Beach's line, but several aesthetic details were incorporated. Steam engines were hidden away from view in conduits under the street. These engines pulled cables which powered the elevated trains supposedly

³⁰Mishoe Brennecke, Jasper F. Cropsey: Artist and Architect. New York Historical Society, 1987, pg. 141.

rendering the line silent.³¹ Harvey consciously designed the single row of columns bearing the track to look like trees and recognizing the Aesthetic need for comfort, Harvey introduced "shad belly cars," which sat low to the track, giving the illusion of added stability. The cars themselves featured elegant curtains with heavy swags and tiebacks; speeds were only fifteen miles per hour.³² Despite some Aesthetic touches Harvey was a poor investor and in Jay Gold's 1869 attempt to corner the gold market, Harvey's bank collapsed and took all his operating and capital funds with it. Dismissed in disgrace by the board of directors, the line soon ran into mechanical issues without Harvey's expertise and in 1871, much to Tweed's delight, the line was sold at a sheriff's auction for \$960.

In terms of creating a truly Victorian Gothic elevated train system however, Jay Gould, the very man who had ruined Harvey would turn out to be the elevated railroad's savior. In 1879, he merged the scraps of elevated railroad operating in New York City under his control and placed them on a firm financial footing. With this firm footing came a concrete and thorough art program based on the Victorian Gothic. To prevent frightening horses or people, the small steam engines that had replaced the cable system were at first shrouded in a boxy casing to make them look like just one more car and reduce some of their noise. These locomotives still trying to be an industrial revolution power source that was concealed, but that was festooned with bright colors and polished brasswork show the merger of Aestheticism and Eastlake Gothic. It is important to note that though art trends came and went and were applied to transit systems in their turn, many times older influences still crept into the decorative schemes of the next movement.

³¹Robert Carrol Reed, The New York Elevated. South Brunswick and New York, NY, A.S. Barnes Co, Inc. 1978, pg. 38.

³²The New York Elevated, pg. 34 & 36.

With the merger, Rufus Gilbert was recalled from obscurity and charged with giving the "El" a defined artistic program. However, the artist who would execute the El's unified Eastlake look was Jasper Cropsey. Cropsey was an American landscape painter who is today often compared to Englishman J.M. Turner. Cropsey had a special affinity for landscape painting and believed that visions of the wild American countryside were key for bringing Americans closer to God and forging a close-knit national identity.³³ A native of Staten Island, Cropsey's architectural training had been with the New York firm of Joseph Trench. His values in artistry and design were those of staunch American traditionalism in terms of his views of the countryside as a virtuous and healthful place mixed with the more recent influences of Calvert Vaux, one of the designers of Central Park, and Andrew Jackson Downing. Cropsey as is evidenced by his earlier quote believed greatly in ornament and that medieval design elements should enter into building which attempted to have a moral import. One important line to be drawn between the more famous members of the artistic community such as Ruskin and Cropsey is their view on production. Ruskin felt that all such ornament must be hand-worked, Cropsey did not mind working within a range of decorations enforced on him by the limitations of the cast iron used in the construction of the Gilbert Elevated stations.³⁴ Regardless of whether Cropsey was an arch proponent of Victorian Gothic, willing only to utilize handcrafted ornament, or more flexible, he was well aware of such high apostles of the style, such as Pugin the architect behind the perpendicular Gothic styling of the English Houses of Parliament. Pugin, who's work in Westminster Cropsey had called "one of the most beautiful works in

³³Jasper F. Cropsey, pg. 14 & 18.

³⁴Jasper F. Cropsey, pg. 135.

existence," was an extremist when it came to the medieval elements of Victorian Gothic and felt that modern culture was highly degrading to those who participated in its rapid flow.³⁵ Though Cropsey was more willing to bend the rules of 19th century Gothic he was clearly well aware of high artistic currents and brought them to bear as best he could on his rapid transit commissions.

The complex nature of the architecture involved in the El stations forced the managers of the Elevated Railway to pair Cropsey with specialists from the J.B. and J.W. Cornell Iron Fabrication Company, but this is significant beyond showing that Cropsey was somewhat inexperienced when it came to working in iron. It shows that Gilbert and his superiors cared

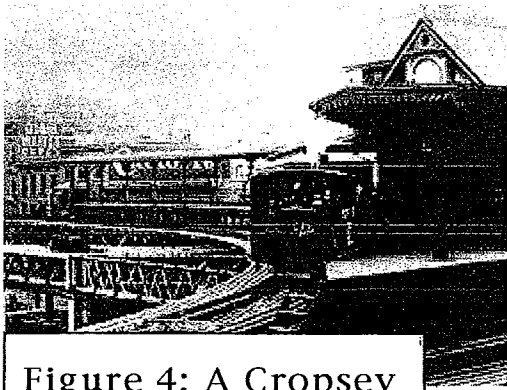


Figure 4: A Cropsey station

enough about the artistic statement their system was making to hire a man who was a purely involved in design and in austere and purely financial terms, useless.³⁶

The utilization of Cropsey as architect on the El stations also showed that large-scale rail lines had interests in the development of rapid transit within urban areas. Cropsey had designed a mansion for railway sleeping car magnate George Pullman in 1874. Pullman had been instrumental in bringing comfort and fashion to long-distance American railroads. He was a major backer of the elevated system and he provided the cars for it. Cars that came complete with oriental carpeting coal stoves for the chilly New York winters, and oil lamps. The Pullman El cars also showcased an Eastlake

³⁵Jasper F. Cropsey, pg. 137.

³⁶Jasper F. Cropsey, pg. 136.

Gothic paint scheme including apple green, dark green, blue and dark Aesthetic reds.³⁷ Pullman was obviously pleased with Cropsey's 1874 job, as he was instrumental in landing Cropsey the commission for the El's stations.³⁸

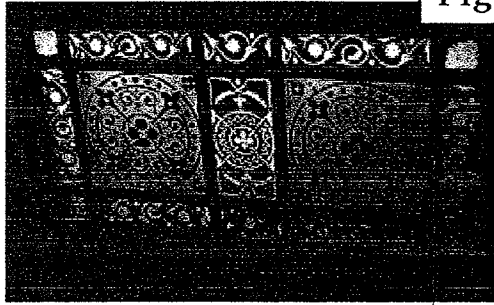


Figure 5: Stained glass along the line

Cropsey's stations, which were much like contemporary intercity railway stations represented a quantum leap ahead of stations built during the early stages of elevated rapid transit under Harvey. In a marvel of blending Victorian Gothic medievalism with industrial needs, the Cropsey stations looked irregular in their plan, but were actually a simple rectangle. The waiting rooms clearly showed Eastlake's influence with black Walnut for the seats, countertops and walls. The skylights in the ceiling featured green, purple and amber stained glass and the gas lamps used to light the stations were worth \$20 apiece. The luxurious stations were amply heated and had separate men and women's waiting and bathrooms. Painted in green and gold, Cropsey made use of punched iron to adorn his stations with finials capping the roof and quatrefoils along the railings of the spidery stairs which descended from the platform to street level.³⁹

Shop keepers along the line at first resisted the highly decorated stations, but were later grateful for them when their business quickly improved after the inauguration of service through these gems of transportation. As Robert C. Reed says in his book The New York Elevated, Cropsey's work went a long way to ameliorating the El's "dark intrusion into

³⁷The New York Elevated, pg. 99.

³⁸Jasper F. Cropsey, pg. 141 & 145.

³⁹Jasper F. Cropsey, pg. 145.

the city streets."⁴⁰ When the architect died in 1900, *The New York Times* fondly praised his stations as impressive works of art, even when Beaux Art Classicism had firmly become the order of the day.⁴¹

Even as the delicacy imparted to people by Aestheticism waned during the mid-1880's and the shrouds were taken off the miniature steam engines pulling the El trains, they still retained an Eastlake decorative scheme. This look involved plenty of red, a russet color known as Russian Iron and a panoply of polished brass fittings also, they carried gothic tracery and fancy script on their cabs and boiler jackets, making them "pleasing to the eye."⁴² The little locomotives were known as "Forneys" after their inventor, Mathias Forney, born in Baltimore in 1825. These small and highly efficient engines were the laptop of nineteenth century steam locomotive technology weighing in at a scant twenty-four

Without a tender they
all their own coal and
and ran equally well
forwards or backwards.

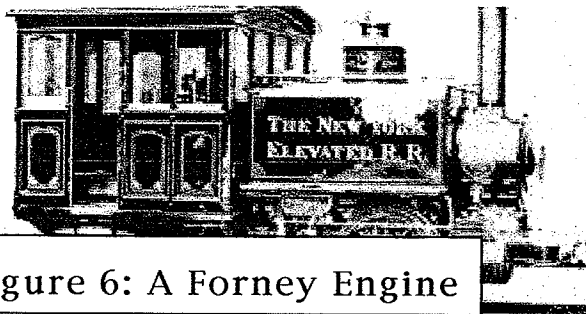


Figure 6: A Forney Engine

tons.
carried
water
Their

safety record was impressive and until electrification they were the best the transit world could apply to the sharp corners and steep grades encountered on elevated railways. The Forneys also proved their durability being trotted out for a last run during a 1930's blizzard which iced over the third rail on the Third Avenue Elevated.

In summation, the Gilbert Elevated was the first public transportation system to have a uniform artistic design. Inspired by Rufus Gilbert, carried out by Jasper Cropsey, and backed by such transportation moguls as George

⁴⁰*The New York Elevated*, pg. 99.

⁴¹Jasper F. Cropsey, pg. 148.

⁴²*The New York Elevated*, pg. 82.

Pullman, the El not only sported an artistically cutting edge design scheme, but also one which tastemakers of the time touted for being "moral" architecture. However, New York's greatest contribution to the arts merger with rapid transit, and one which can still be enjoyed today, was yet to come.

In 1893, much to New York City's chagrin, Chicago hosted the Columbian Exposition, also known as the World's Fair. The fair, even at a time of economic depression in the United States was met with great success. Perhaps the greatest single invention showcased at the fair was electricity. At the fair's opening day, President Grover Cleveland had thrown a single switch and turned on all of the fairs lighting, fountains and attractions in a split second.⁴³

Under the direction of Daniel Burnham, prominent architects of the day such as George McKim and Richard Morris Hunt built a complex of 150 buildings, including those done in the Beaux Art Classical style clustered around the artificial lagoon which anchored the "Court of Honor." The buildings, those impressive in their Roman splendor were only temporary, composed of "staff," a mixture of jute and plaster-of-Paris that resembled marble when dry. Rational, uniform and clean, the White City, as it came to be known, with its dependence on electricity would become the blueprint for American cities from the opening day of the fair until the advent of Modernism after World War One. The White City also marked a return to more conventional gender roles in American society. With classicism returned the warrior virtues of Cincinnatus or the Horatii, as exemplified by the strong, virile and regimented music of John Phillip Sousa, a big hit at the fair.⁴⁴

⁴³Encyclopedia Americana, Grolier, Inc, 1998, pg. 532.

⁴⁴Oscar Wilde's American, pg. 39.

The Aesthetic Age was over. America it seemed was rousing herself from her fling with luxurious lassitude and was now going to claim her position as leader in the world. In the cities, Classical architecture would usher in a new age of moral government and moral citizens, all steeped in a crusading patriotism which would bring order out of nineteenth century chaos and brilliant electric light out of guttering gas lit Victorian darkness.

However, as with earlier movements, the City Beautiful Movement, with its drive towards rationality imposed through classical architecture had deep roots in the American 19th century, roots that it shared with Aestheticism and Victorian Gothic. According to William Wilson, the author of The City Beautiful Movement, the "taproot" of the movement was in 19th century landscapers like Frederick Law Olmstead.⁴⁵ Olmstead had always argued for civic improvements such as the construction of parks, despite their high cost, in terms of their benign influences on morality and business and their ability to glue together disparate social classes into a homogenous American whole.⁴⁶ Andrew Jackson Downing, the tastemaker so important to Victorian Gothic, had argued for such improvements in that they had the power to "soften and humanize the rude, educate and enlighten the ignorant."⁴⁷ Beauty could be used to refine the sensibilities of the lower classes and this was exactly what all the artistic movements, which had played on the public's imagination, were trying to do. The installation of artwork in such public places as subways and elevated railroads had been especially aimed at such a transformation. Now, with the model of the White City and a whole package of urban ideals Americans felt they were embarking on a

⁴⁵William H. Wilson, The City Beautiful Movement, Johns Hopkins University Press, Baltimore, MD, 1989, pg. 9.

⁴⁶The City Beautiful Movement, pg. 10.

⁴⁷The City Beautiful Movement, pg. 14.

fresh journey with a superb promise of forthcoming victory. In those Americans who had seen the fair, they felt a new stir of patriotism within them. Here they felt was a chance to channel all of America's economic exuberance and power, which during the past hundred years had so often led to industrial slums as a byproduct of the generation of great wealth, into something higher.⁴⁸ Here was one of the first impulse in American history towards large scale city planning which would create better, more harmonious cities, and transportation was inextricably bound up in this great plan of benign authority and forward thinking.⁴⁹

Another aspect of the City Beautiful Movement, which when paired with electricity made for important strides in rapid transit technology was the idea of cleanliness. Prior to the Civil War, the standards of personal hygiene in the United States were on par with the third world. Saturday night bathing was intended only to be respectable at church and the facilities for so doing were rudimentary at best.⁵⁰ With post-war urbanization, cleanliness, especially in terms of having adequate water systems in place became of paramount importance.⁵¹ Being clean quickly became equated with middle class respectability and women, as protectors of the home were anxious to enforce cleanliness upon those whom dwelled within their purview. Nineteenth century urban and rural neighborhoods were smelly, unpleasant places kept clean mostly by pigs and flies, toilets, invented in the 1850's were connected merely to backyard cesspools and such areas often turned into spongy swamps of refuse.⁵² The City Beautiful Movement hoped to correct

⁴⁸Reid Badger, The Great American Fair, Chicago, IL, Nelson-Hall, Inc, 1979, pg. 114.

⁴⁹The Great American Fair, pg. 114-5 & 120.

⁵⁰Suellen Hoy, Chasing Dirt: The American Pursuit of Cleanliness, New York, NY, Oxford University Press, 1995, pg. 3.

⁵¹Chasing Dirt, pg. 5.

⁵²Chasing Dirt, pg. 12-13.

all this and replace it with a clean world. This was especially the goal in urban areas where the working class, surrounded as they were with dirt producing factories and deprived of running water in their high tenement apartments.⁵³ During the City Beautiful Era, the germ theory was still not fully accepted and disease was thought to arise from bad smells associated with decomposing material. City Beautiful reformers went after such stench producers with a vengeance. Edward Bok, the Danish born editor of the *Ladies Home Journal*, would go so far as to equate cleanliness with one's loyalty as an American citizen. Employers who invaded their immigrant workers squalid homes with social workers and sent them to classes in the use of hot water and soap also bought Bok's theories of clean, loyal citizens.⁵⁴

The City Beautiful Movement would be the largest "meta-effort" to create rational cities and good citizens out of the questionable arrivals from Europe. Cities of the era were bewildering and cleanliness was embraced as at least one way to control on element of the city's chaotic nature: disease.⁵⁵ The bearing of all this on rapid transit, which was central to the Beaux Art City Beautiful, was that electrical mass transit, decorated in the academic style of the White City would come to symbolize the very latest in clean technology which rationalized the city and naturalized the immigrant. It would let him access libraries, parks, schools, and some day that much vaunted middle class detached home in suburbia, and while he was on it, it's Beaux Art decorative scheme would be filling his mind with all the right thoughts. With this in mind, Americans in Boston and New York embarked on their most ambitious and beautiful transit projects.

⁵³Chasing Dirt, pg. 17.

⁵⁴Chasing Dirt, pg. 69 & 88.

⁵⁵Chasing Dirt, pg. 69.

By the time of the 1893 World's Fair, the Elevated System in New York was doing yeoman service ferrying people around the city. However, the city was expanding and new neighborhoods were already deciding that an El was not something they needed bringing perpetual night to their streets. The population was getting too dense for the El alone to handle and a New York Chamber of Commerce report summed up the situation neatly by saying, "in sparsely inhabited regions these roads will no doubt be found useful in the future, but their field is limited."⁵⁶ Accordingly, the subway, an idea in New York since 1850, but never a reality was at last launched in 1900. The subway, dubbed the I.R.T. or Interborough Rapid Transit, was a mixture of public and private enterprise. The trains were owned and operated by the I.R.T, a private firm under the control of August Belmont, Jr. The City of New York owned the tracks and tunnels though built by a construction firm that also reported to Belmont.⁵⁷ The subway, which would be electric, set out to remedy the difficulties New York had come to experience with the elevated as the Chamber of Commerce stipulated that the system be "noiseless" and "above all, not unsightly."⁵⁸ Clearly, among other things, the beauty of their system was at the fore of the concerns held by the backers of the I.R.T. For the impressive artistry that would come to grace their tunnels, the city fathers and Belmont turned to the firm of Heins and Lafarge. The firm was already building a private chapel for Belmont at St. John the Divine. Yet aside from their connections with the project, the team came with good credentials; famous for their work on the Bronx Zoo, they were the son and brother-in-law of John Lafarge who had made a name for himself in stained glass and

⁵⁶Rapid Transit in New York and Other Great Cities, New York Chamber of Commerce, 1906, pg. 50.

⁵⁷Lee Stookey, Subway Ceramics: A History and Iconography, William J. Mack Co, Brattleboro, VT, 1994, pg. 14.

⁵⁸Rapid Transit in New York, pg. 8.

mural painting.⁵⁹ Heins and Lafarge were charged with making each station beautiful as well as giving each station a unique character that would tell riders where they were. According to Lee Stookey, author of Subway Ceramics, New Yorkers came to know the allegorical symbols at various stations, reading them as easily as a "barber's pole."⁶⁰

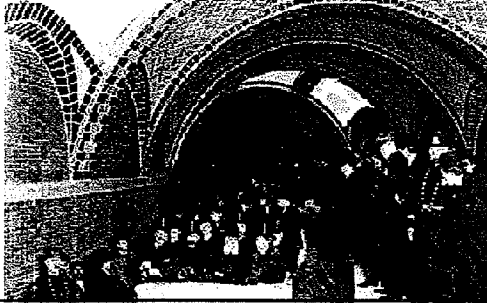


Figure 7: 1st run out of City Hall

The crown jewel of the Belmont I.R.T. was the City Hall Loop. Closed in 1945, both out of fears of terrorism and that it had become too tight a corner for modern subway cars, City Hall is a triumph of the Beaux Art under ground. Done in a

symphony of brown, green, yellow and white tile, the station is built on a curve and features an impressive barrel vault by the Guastavino Company. The Guastavino's, natives of Valencia, Spain brought the technology of the Catalan Vault to the United States and as sole manufacturer and contractor for such vaults enjoyed a monopoly over the interior roofs of many Beaux Art buildings, including the Boston Public Library. The vaults were fireproof and were composed of thin, laminated layers of concrete and tile. Almost self-supporting the Catalan Vault requires little buttressing and, as it was at City Hall, can easily be pierced for skylights, further their construction time was far shorter than more conventional vaulted ceilings.⁶¹ Despite the use of the Guastavino Vault, the City Hall Station was prepared using the same method as the rest of the I.R.T, cut and cover. In the cut and cover method, a trench is dug, the subway built in it, and then the entire construction covered

⁵⁹Subway Ceramics, pg. 14.

⁶⁰Subway Ceramics, pg. 17.

⁶¹Janet Parks and Alan J. Neuman, The Old World Builds the New: The Guastavino Company and Techology of the Catalan Vault, Trustees of Columbia University, 1996, pg. 11.

again. Though a complex process, it was easier in the 1900's, in New York City, than blasting a bored tunnel through the deeper bedrock, even though the bored tunnel would have avoided tangled utilities.

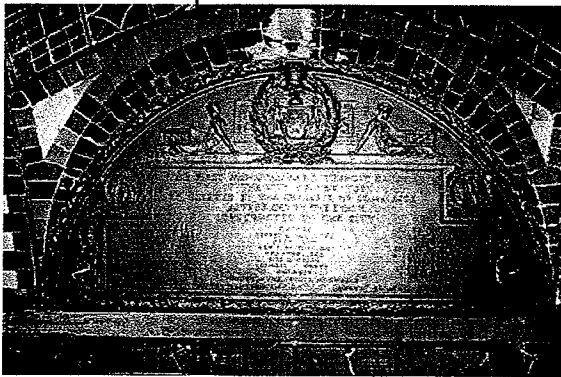


Figure 8: City Hall's curved platform

Like other great Beaux Art monuments such as Grand Central Terminal, or Pennsylvania Station by McKim, Mead and White, City Hall felt like a Roman bath. Far from the domesticated subway of Alfred Beach, City

Hall was temple to the American City Beautiful vision, it is electrically lit and powered, its arches are bold and forceful just as America herself hoped to become. *House and Garden* praised City Hall as "an apotheosis of curves...where the daily rider will be swung to his office...and as gaily spirited away," the station was a triumph for Belmont, the city, and the artists involved.⁶²

Figure 9: Artistry at City Hall



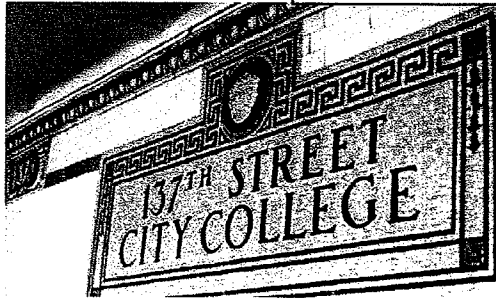
City Hall, however, was a unique and unrepeatable feat on the I.R.T. Subsequent stations presented Heins and Lafarge with only right angles and flat walls. However, the Beaux Art scheme remained firmly

entrenched and continued to show that the I.R.T was well aware of artistic trends in American culture. A variety of "Roman" materials were used in the stations heading uptown including marble, brick, ceramic and glass tiles. With these, Heins and Lafarge shaped egg and dart moldings, Greek key

⁶²Subway Ceramics, pg. 15.

borders, scrolls, bells, swags, garlands and leaves like those of "Della Robia."⁶³ The Grueby Faience Company produced such impressive plaques as those found at Bleecker Street or 137th. 137th Street, the stop for City College

Figure 10: Classicism at 137th St.



features a classical allegory for the college, a triple face representing past, present and future, while an egg and dart molding serves to merge the walls, where floral and Greek key motifs dominate into the flat surface of the ceiling. At Wall Street, the Colonial Revival, a taste present in America since the 1870's and effected by Aestheticism, Victorian Gothic and Beaux Art, made an appearance. In a plaque by the Rockwood Pottery Company of Cincinnati, we see an old Dutch house, surrounding by the original wall of Wall Street, but the plaque is capped with Classical swag suggesting a blending of styles.

The stations weren't the only Beaux Art element of the I.R.T. Belmont, who reaped impressive profits from the subway constructed a private subway car, dubbed the *Minneola*, a name with which Belmont was fascinated, which incorporated the latest in Classical taste. Built of Teak and Mahogany, the car boasted richly upholstered seats, an office, a kitchen, a toilet decorated with classical acanthus leaves, and Tiffany stained glass windows. The *Minneola's* purpose, other than displaying Belmont's wealth, was to take Belmont and his guests from his New York hotel to his horse track in outer Brooklyn. Currently, the car is in disrepair at the Easthaven, Connecticut Trolley Museum, and though not on public display can be

⁶³Subway Ceramics, pg. 15.

viewed by asking nicely. Other than showing off Belmont's money and telling a nice story, why is the world's only luxury subway car important? It shows, without a doubt, that Belmont believed enough in the message that the Beaux Art sent to surround himself with it.

From the horse cars of the pre-Civil War to the Aesthetic subway of Alfred Beach and then to the Beaux Art masterpiece of August Belmont via the Victorian Gothic Elevated of Jasper Cropsey, New York's upper class financed and campaigned for rapid transit systems in their city. Each system showed great thought and care when it came to decorative scheme, often sporting cutting edge styles, yet all had the same purpose: the civilization of the immigrant. Each artistic style had deep roots in American thought and culture and each believed that beauty could make men, loyal American men out of beasts. Having watched this development in New York, we now move north to watch it unfold in Boston.

The path that the City of Boston followed to rapid transit was significantly different. As has been mentioned previously, Boston's narrow streets, rolling terrain, sandy wet soil and "sacred spaces" such as the Boston Common and Public Garden all forced Boston to take on a very different outlook than her neighbor to the south. Population size also played a significant role, for while New York was already experimenting heavily in the 1870's with various forms of rapid transit, Boston had a system of first horse car and then electric streetcars into the 1890's. However, by 1891 the traffic on Tremont Street in downtown Boston had become so thick that it routinely approached gridlock. Unable to spread out across the Common or the Public Garden, all of Boston's trolley lines were forced onto four tracks in the center of the city. In 1894, a government appointed rapid transit commission suggested that the appropriate way to clean up the mess in

downtown would be by building a tunnel under Tremont Street. The tunnel however, was not a solution to a citywide transit problem, but rather an instance of the Massachusetts State and Boston city governments performing bypass surgery in the heart of downtown rather, if the metaphor will take the stretching, building an entirely new transportation artery. Though the aboveground entrances for the new Tremont Subway, completed in 1897, were nicknamed "The Boston Public Library's Puppies," for their restrained, granite Beaux Art styling, the Tremont Subway was a relatively plain affair. Though its construction speaks significantly to the differing political climate in Boston, as opposed to New York, the artistically significant aspect of Boston's transit system was the north-south elevated railroad, conceived in the twilight of the nineteenth century and executed in the dawn of the twentieth.

Daniel Burnham, the great maestro of the 1893 World's Fair had said regarding urban planning that "formless growth of the city is neither economical nor satisfactory."⁶⁴ One of the central aspects of Beaux Art city planning was the rationalization of the train system. In 1914, Kansas City, became America's first "fully functioning Beaux Art city,"⁶⁵ with the completion of a park system and a union station. In those days, rail links determined what property was valuable and for which functions. The old Kansas City Depot, rambling on for a block, and surrounded by pawnshops and cheap hotels was exactly what Beaux Art city planners were hoping to do away with and in Kansas City, as well they might. The station was too short to fit modern trains and as a result trains had to broken up and shuttled onto

⁶⁴ David F. Burg, Chicago's White City of 1893, Lexington, KY, University Press of Kentucky, 1976, pg. 308-9.

⁶⁵ The City Beautiful Movement, pg. 193.

different tracks. Seventy-five percent of arriving trains ran late and parts of them often got "lost."⁶⁶

The north-south elevated in Boston, which followed routes first, established by omnibus service, terminated with two "union" stations, one in Sullivan Square and the other at Dudley Square. These two extremely large elevated stations, Sullivan Square had an arched glass train shed 180 feet wide, acted as nerve centers, rationalizing the tangled Boston trolley system.⁶⁷ Dudley and Sullivan Square showed that the Boston Elevated Railway Company, a private company created by the city, was not only at the

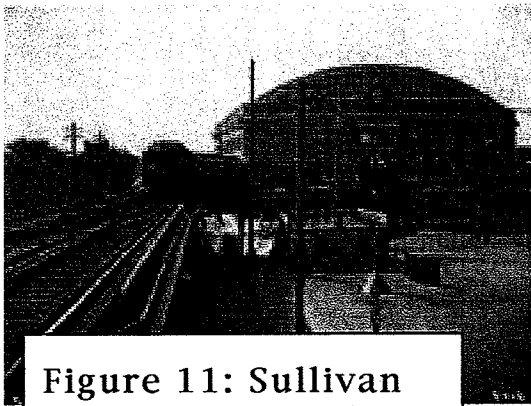


Figure 11: Sullivan Square Terminal

conceptual cutting edge of Beaux Art planning, but also as we shall see the artistic edge. The elevated system in Chicago, completed in 1895, had convinced many Bostonians that El's did not have to be as oppressive as they become in New York.⁶⁸ Feeling

that they could do better than New York, the Boston Elevated Railway Company, or BERY, hired A.W. Longfellow, a relative of the famous poet to design all of their stations.⁶⁹ Longfellow, conscious of what Bostonians did not want, borrowed heavily not only from the Chicago system, luring away their Chief Engineer, but also tried hard to emulate the stations of Berlin's newly constructed rapid transit system. According to contemporary critics,

⁶⁶ The City Beautiful Movement, pg. 194-5.

⁶⁷ Edward Dana, Fifty Years of Unified Transportation in Metropolitan Boston. Boston Elevated Railway Company, 1938, pg. 58.

⁶⁸ George Chiasson Jr. Boston's Mainline El: The Formative Years - 1879-1908, New York, NY, Headlights, Vol. 49, 1987, pg. 8.

⁶⁹ Cynthia Zaitzevsky, Historical Documentation: Boston Elevated Railway Company Washington Street Elevated Mainline Structure (MBTA Orange Line). Washington, DC, Kaiser Engineers Inc./Fay, Spofford and Thorndike, Inc. 1987, pg. 8.

the stations produced were light, airy and architecturally excellent.⁷⁰ Unlike the New York elevated, which eventually found its way to a unified architectural program, the BERY, enjoyed one right from the start. The style was described as Gothic and Classical, an odd pairing, in a style known as "Early French Renaissance," but one which possessed "symmetry, grace, motion," and made extensive use of curvilinear lines.⁷¹

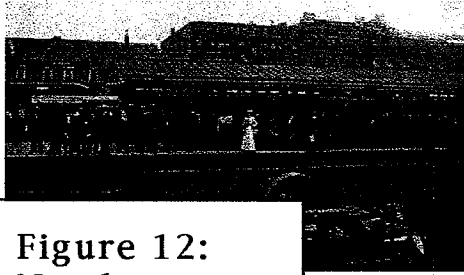


Figure 12:
Northampton

Line stations typical of the Longfellow era, were those found at Dover and Northampton Streets. Each had a covered platform 160 feet long and capped with an

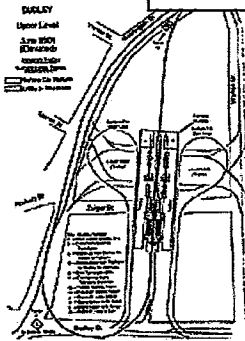
overlapping copper roof. The roof sported dormer windows and a central Beaux Art cupola flanked by diamond shaped finials at either end of the platform shelter. The diamond motif continued to dominate a glass clerestory and the copper pilasters that supported it. Each station was reached by thirty-eight iron steps capped again with a copper roof, the landings consisted of small pavilions topped with diamond finials and the wrought iron banisters also bore copper facing with a diamond pattern. Though the copper on the stations was quite green by the time I saw them in the early 1980's, the new stations must have sparkled impressively, creating a Beaux Art beauty, which was worthy of the White City. If beauty could make moral citizens, Boston was certainly on her way to having a plentitude of them. The waiting rooms of such "typical" stations were furnished in oak with hard pine flooring. The ticket booth was octagonal and sat atop a slab of Tennessee marble, the ticket window was protected by a wrought iron grille and each waiting room included porters' closets, benches for patrons, and bathrooms.

⁷⁰ Historical Documentation: Boston Elevated Railway Company, pg. 24.

⁷¹ Historical Documentation: Boston Elevated Railway Company, pg. 40.

Both arc electric as well as the more modern incandescent system provided lighting.⁷²

Figure 13: Complex Dudley track plan



The Dudley Square Terminal was built to harmonize with and punctuate the rest of the line. In this complex urban transit "union station" a web of trolley lines were brought together.

Trolley cars either delivered their passengers on the ground floor of the terminal or rode up ramps, which allowed them to drop off riders at the same level as the mainline El trains.

The station platforms were covered with copper roofs, like the line platforms,



but these roofs were studded with a series of cupolas and finials. Extensive clerestory windows also followed the roofing around the terminal.

Figure 14: Main platform at Dudley

Below the track level, passengers could wait in two eighteen square foot waiting rooms with diamond pane sash windows. The exterior of the terminal featured copper panels and pilasters and classical entrances distinguished by their tympanums and spandrels. The interior floors were done in terrazzo and the main loading platform featured restrooms, storage closets, a ticket office and a convenience store.⁷³ The BERY not only showed a command of City Beautiful styling in the construction of their stations, but also highlighted the fact that in constructing their urban transit networks, executives of such systems were emulating large intercity railroads such as the New York Central or the Boston and Maine. Dudley's

⁷² Historical Documentation: Boston Elevated Railway Company, pg. 41-2.

⁷³ Historical Documentation: Boston Elevated Railway Company, pg. 43-44

main waiting room, a 160 square foot octagon, sported an oak dado, buff brick walls, maple floors and a coffered oak ceiling, carried on steel trusses meant to look like arches with keystones and spandrels.⁷⁴



Figure 15: Dudley's waiting room

As we will see in the next chapter, both Boston's BERY and New York's I.R.T. after a boom time in first decade of the twentieth century began to experience economic hardship in the second. For both artistic reasons, the overblown Beaux Art styling of the 1893 fair began to fade, and money became an issue, decorative schemes, though not curtailed, were greatly simplified from the extravagant designs of the 1890's and 1900's. For example, in Boston, Green Street and Egleston, built between 1909 and 1912 show a clear departure from the style used in Dover and Dudley. Less use was made of steel, more of reinforced concrete. Large plate glass windows were used rather than diamond pane, and significantly, much less copper was used in these later BERY stations.⁷⁵ Still, even as the financial situation tightened, the BERY did not end its commitment to architectural merit. The Forest Hills Station, built in 1909 as a new terminus for the line, further south than Dudley in newly developed suburbs, was designed to harmonize not with the rest of the line as conceived by Longfellow, but with the Arbor Way, part of Olmstead's Emerald Necklace. The approach to Forest Hills was built of steel like the rest of the line, but then encased in patterned concrete to resemble rough-hewn stone. The Germanic influence remained strong with BERY architects as the Forest Hills Station is often likened to Otto Wagner's famous Gumpendorfer Strasse Station in Vienna, but there were small details to

⁷⁴Historical Documentation: Boston Elevated Railway Company, pg. 44-45.

⁷⁵Historical Documentation: Boston Elevated Railway Company, pg. 46.

indicate that already things, financial and artistic were changing for the BERY. Instead of Oak and Maple, the only wood used in the station was White Pine. Many of the decorations for the station were built using reinforced concrete and only clad in copper. Unlike at Sullivan Square where mainline trains and local trolley cars arrived and departed from underneath a glass and steel train shed, station tracks at Forest Hills Station were open to the sky.⁷⁶



Figure 16: Forest Hills

Art in between the Civil War and World War One was a subject for serious consideration among many Americans. Art defined a person, in what was in his house, what he wore on his person, art was very much a public thing during this era. Art, it was

thought could make a moral person, and this is exactly what established Americans were seeking to create in the immigrant population. Considering how such Americans felt that suburban life, and land ownership could produce moral, Americanized people, upon reflection, it seems only natural that moralizing artwork to be installed on transit systems designed to allow the very people slated for moral improvement to reach the good green fields of suburbia. Even as art in America changed through three very different movements, the idea remained constant that beauty improved the souls and minds of those who partook of it. A study of arts in rapid transit however, is not merely useful in taking America's philosophical pulse during the era in question. Even more important as has been noted in the "tour" of the BERY system also serves as an economic barometer key to arguments that will be made in the next chapter.

⁷⁶Historical Documentation: Boston Elevated Railway Company, pg. 47.

Chapter Four: Political Change, Boom and Bust

With the rapid increase in the size of American cities during the second half of the nineteenth century, the government of these cities had to change rapidly to adapt to the changing environment in which they found themselves. Many middle class and rich Americans saw private investment as the correct way to create the vast projects such as water, sewer and rapid transit needed to keep large cities from breaking down. Not only was there a strong belief in the abilities of private capital to get such needed projects built, but also it was seen as essential for keeping the corruption associated with city government out of important public works projects. As Jon Teaforde states on the opening page of his work on American city government, The Unheralded Triumph, during the 1880's and 90's city governments were attacked from all sides as the "worst kind of thing in all the world."¹ However, a host of impressive urban projects deny this dim view of city government. Water and sewer systems, rapid transit, libraries, and urban park systems combined to give urban Americans, especially in New York, Boston and Chicago, the best of civic amenities by the turn of the 20th century. In light of this, Teaforde suggests that city government was doing what it was supposed to and doing it well.² The creation of rapid transit to serve America's cities can be seen not as a failure of the urban governments which ultimately took control of such systems in the early 20th century, but of the private companies which ran transit companies and failed to plan correctly for their economic future. In looking at American urban government during this period of explosive urban growth we see a distinct pattern which helps explain

¹ Jon C. Teaforde, The Unheralded Triumph: City Government in America, 1870-1900, Baltimore, MD, Johns Hopkins University Studies in Historical and Political Science, 1984, pg. 1.

² Unheralded Triumph, pg. 3 & 6.

the growth of rapid transit which, one which expressed middle and upper class values. During the 19th century, as cities grew to be more than just large scale villages a dichotomy emerged within city government in which native born American Protestants controlled the money and executive power and immigrant Catholics dominated the legislative element. In 1800, in places like New York, Boston or Philadelphia, city councils had been firmly in charge, leaving many mayors as figureheads. However, by the 1890's, mayors and executive committees ran cities and left city councils stripped of much of their former power. Teaford suggests that this occurred for two reasons. Alderman, or city council members, had become notorious for corruption. During the middle of the century when New York's aldermen had been known as the "forty thieves"³ for their profligate sales of street railways franchises, and distressed by the rot they had seen within their city government urban Americans had acted to strengthen executive authority as a bulwark against it. Further, Teaford makes the case that as technical knowledge became necessary to correctly run cities, be it of gas, electricity or water, specialists, appointed by and clustered around the mayor gained a high degree of prominence which often overshadowed the city council.⁴ In this scheme of things, civil engineers came to dominate city politics, but as appointees were safely insulated from the winds of popular politics, especially in New England.⁵ This view is also echoed by Sam Bass Warner in his book of the "streetcar suburbs" of Boston when he states that the making of cities with advanced technological components led to the growth and power of non-elected bodies.⁶ Examples of this sort of reduction in city council power include

³ Unheralded Triumph, pg. 18.

⁴ Unheralded Triumph, pg. 6 & 15.

⁵ Unheralded Triumph, pg. 133.

⁶ Sam Bass Warner, Streetcar Suburbs: The Process of Growth in Boston, 1870-1900, Cambridge, MA, Harvard University and MIT Press, 1962, pg. 2-3.

Brooklyn and New York in the 1870's and 1880's, and in 1885 when the Massachusetts state government stripped police and financial powers from the Boston city council, leaving it an essentially ornamental body by 1895.⁷ Indeed one of the few powers left to the average city council in the 1890's was to stymie their mayor's control over public works projects by denying his appointees their offices.⁸

Further, with opposition from below largely co-opted or tabled, city governments did not often face serious difficulties from their state legislatures. Though in the course of a study of the development of rapid transit in the late 19th century, one can certainly find instances of upstate, rural representatives lashing out at cities through restrictive legislation, in general, "good taste" demanded that rural legislators keep their nose out of the city's business. Boston often faced serious debate on the best way to proceed with her rapid transit schemes during the 1880's and 90's, but the arguments were conducted between urban and suburban voters, rather than legislators from the metropolis and their supposed opponents from Cape Cod or far western Massachusetts.⁹

With the middle, upper and technical classes playing a leading role in the city government of the late 19th century, it was clear that they would have a great impact on the development the urban areas they controlled. However, this was not the only avenue that such groups of people took to rationalizing and controlling their cities. Entirely "non-political" groups such as reform leagues, boards of trade, architects, sculptors and doctors all played a role in shaping the city of the late 19th and early 20th century. Such middle and upper class clubs drafted legislation, lobbied politicians, and in the case of New York's Chamber of

⁷ Unheralded Triumph, pg. 18-19.

⁸ Unheralded Triumph, pg. 42.

⁹ Unheralded Triumph, pg. 85 & 90.

Commerce were instrumental in the construction of rapid transit systems.¹⁰ Time and again, municipal government aided by civic organizations, which included the same class, and type of people would be central in creating rapid transit networks, besting Europe in terms of comprehensive transportation and electrification.¹¹

In a large part, we can see the city of the late 19th and early 20th century as a creation of the middle and upper classes, run by them and reflecting their values. The libraries, parks, schools and transit systems designed to decant dense urban populations into the suburbs where they could live the middle class life. The chief principle in government and urban thought of this era was to firmly segregate the city's zones of work and dwelling.¹² This was a key goal of the middle class and one that rapid transit invariably helped to accomplish. For example, Boston, by 1900 had accomplished this goal and become a divided city with defined zones of work, recreation and residency.¹³

Indeed, one aspect of political life, unique to 19th century Boston was the recognition of the dominance of the Protestant middle and upper classes in the executive branch of city government, and an alliance by the Catholic, Irish, legislative element with it. In Boston, Yankee and Irish Democrats made common cause with great respect for each other's "sensitivities" and yielded impressive results. Ambivalent as they were towards the "new" immigrants, those coming from south-eastern Europe, the Yankees and the Irish combined their forces to produce a rational city in which they could both lead middle class lives and Americanize the new arrivals.¹⁴

¹⁰ Unheralded Triumph, pg. 184, 189, & 190.

¹¹ Unheralded Triumph, pg. 237-239.

¹² Streetcar Suburbs, pg. 4.

¹³ Streetcar Suburbs, pg. 2-3.

¹⁴ Geoffrey Blodgett, The Gentle Reformers: Massachusetts Democrats in the Cleveland Era, Cambridge, MA, Harvard University Press, 1966, pg. 153 & 157.

Clearly, the political system of the late 19th century American city presents a far different picture than the unmitigated corruption that many imagine. Indeed, one problem facing rapid transit advocates was the periodic cycle of reform versus machine urban government, which dominated their cities. However, government was not the only force, which acted in the creation of rapid transit. America was and is a capitalist nation and the workings of the economy tend to effect almost everything that happens.

Capitalism and industrialization are key to understanding the creation of rapid transit. Without them, and the vast expansion of cities they caused, there would have been no need for the transit networks that eventually arose to service industrial cities like Boston and New York. According to Warner, in the years between 1850 and 1900, Boston grew from a compact mercantile city, dependent on its harbor to an industrial metropolis ten miles wide. Former middle and upper class residential areas were overtaken by industry as well as colonized by working class citizens. Both of these pressures combined to continually push white-collar homes further and further from central Boston.¹⁵ Looking at this kind of history no doubt leaves Marxist historians smiling because one can find pure economics at the base of it. Pushed from homes near the center of the city, the middle class developed the "rural ideal"¹⁶ to counteract the fact that they were essentially being pushed out of their homes by the industrial system they had created. From an economic standpoint, we can see that rapid transit is a creation of the 19th century and solution to one of that era's most pressing problems.

Like many things in 19th century America, even the economic thought of the period, which would have profound impacts on rapid transit, had a

¹⁵ Streetcar Suburbs, pg. 1 & 154.

¹⁶ Streetcar Suburbs, pg. 5.

philosophy to it. A man's virtue could be demonstrated through his hard work, and thrift; provided that he exhibited these qualities the theory went that he would do well in the world.¹⁷ One book that extols such virtues and suggests that they will bring success in the transit field is a work written in 1859 by Alexander Easton. Easton's work reads like a self-help book, a sort of "Complete Idiots Guide to Running a Horse Car system." Easton makes the point that some horse car companies had indeed gone bankrupt. However, only because they failed to estimate their costs prudently, undertaken large debts, hired incompetent or disreputable officers or spent too much of their start-up money lobbying for favorable legislation, not because running horse car system might not be profitable under some circumstances. Easton essentially makes the case that anyone could run a horse car line and turn a profit at it. He computed the average horse car line still had thirty-three percent of it's revenue left after paying all it's costs, and provided the proprietor exhibited the right qualities of sobriety, thrift and hard work, he would make his fortune.¹⁸ Easton goes on to suggest that another key to success in the horse car business was proximity to suburban housing developments, which were really getting under way at about the same time he was writing such as Llewellyn Park, New Jersey, developed in 1853. Some of the earliest middle class suburbs were contingent upon steady horse car service. Steam railway service not only limited it's service to stations, a horse car might drop you in front of your house provided you lived along the line, and further, daily commuting by steam railway was only for the rich.¹⁹ Easton then goes on to make a statement that no doubt got many transit operators into trouble. According to Easton, not only could any operator turn a

¹⁷ Streetcar Suburbs, pg. 7.

¹⁸ Alexander C.E. Easton, A Practical Treatise on Street or Horse Power Railways, Philadelphia, PA, Crissy and Markley, 1859, pg. 14-15.

¹⁹ Streetcar Suburbs, pg. 17 & 58.

profit if he launched himself prudently in the transit business, but also that transit was a sound investment even in difficult financial times. Perhaps the most ominous statement Easton makes is that several well planned horse car railways in his own Philadelphia had yet to turn a profit, but he didn't doubt that they soon would.²⁰ Easton's theories, though voice in 1859 would continue to govern the business philosophy with which rapid transit companies would be run until the widespread advent of municipal control after WWI.

Though some of the business philosophy behind transit companies would prove to be unsound, it was not merely such thought, which would ultimately prove fatal to the private control of the industry. The structure of the economy itself and way private transit companies interacted with that structure would also prove highly damaging in the long run. During the 19th century raising large amounts of ready capital was difficult in the United States. Issues with this



Figure 1:
Belmont, Jr.

had proven problematic for many horse car lines, because such lines were often small-scale operations, but with the advent of mechanization, dedicated rights-of-way, such as tunnels, raising capital became a critical issue. Often times, capital had to be drawn from European banking firms, used to mobilizing large amounts of funding.²¹ One good example of this is August Belmont, Jr. the transit magnate of the I.R.T. who represented the American branch of the Rothschild family and regularly corresponded with Baron

Rothschild in England regarding the Baron's investment in New York City.

Loans were also based in the short-term, rather than the long. The average loan in the second half of the 19th century lasted two or three years, rather than the

²⁰ A Practical Treatise, pg. 15 & 17.

²¹ Streetcar Suburbs, pg. 117.

twenty, thirty or even forty years common today. During the period in question builders of suburban housing, considered to be an excellent investment, as well as those who built transit lines to them sought speed of production above all else as they were facing high interest payments and extremely short term loans.²²

What did this sort of economic background mean for the rapid transit companies of the late 19th and early 20th century? The success of the horse car companies, low capital enterprise that they were, touched off an "orgy" of building into low density areas which did not have the kind of population needed to sustain rapid transit. When such lines were mechanized, thus requiring significantly more capital, they became a financial liability. Further, through the period of their development, the transit companies enjoyed falling costs, only to confront economic hardship after WWI when they arrived at maturity.²³ During the 1880's and 90's, largely due to electrification, rides on transit systems became longer per fare. The nickel fare took riders across the nation, three times as far under the wire, or beside the third rail as it had done behind a horse. Beloved by the public and often mandated in arrangements with local governments the five cent ride could not be maintained except during the boom conditions of the 80's and 90's when traction amounted to a gold mine.²⁴ The vast extension of traction systems at low rider costs eventually created serious problems for them. In communities surrounding Boston where the steam railways did not touch street car service was brought in between 1900 and 1910, and even with freight service at night, such lines always proved to be problematic, drawing money away from the economically viable and healthy

²² Streetcar Suburbs, pg. 120 & 125.

²³ Edward S. Mason, The Street Railway in Massachusetts: The Rise and Decline of an Industry, Cambridge, MA, Harvard University Press, 1932.

²⁴ The Street Railway in Massachusetts, pg. 5-6 & 14.

cores of transit systems.²⁵ These outlying lines became an especially difficult liability after World War One in all areas of the country as much of their traffic had come from pleasure riding, which was significantly curtailed by the widespread ownership of automobiles.²⁶ During the summer time, jitney traffic, private automobiles operated more or less like a taxi service, also cut heavily into revenues.²⁷ Further, it was difficult for transit companies to merely slough off such unprofitable lines as they had been purchased with considerable expense. During the boom period of the 80's and 90's a "misguided estimate of the economies of large scale"²⁸ made many systems expand hand over fist. Throughout their fat years, transit companies had enjoyed a situation like Kevin Costner in "Field of Dreams," where if they built it, the riders would come. After 1915, riders did not materialize and the transit companies were left with the debts, a serious difficulty was that many transit companies had been financially questionable to begin with. Stock watering was distressingly common among transit concerns in Boston and New York and when building some lines, the start-up money was almost pure "water," with the issue of stock running well ahead of capital investment. Consolidating small, outlying lines into a traction empire meant absorbing the water of the purchased company as well as taking on its debts. Done over and over again, this kind of fiscal activity could place a serious strain on the healthiest urban transit provider. Manufacturers of rapid transit equipment also enjoyed a boom similar to that experienced by makers of computer hardware in the 1990's. Advances came on the heels of advances between 1880 and 1910 the very latest in transit equipment had to be replaced with the latest and greatest again and again. Convinced that they were would

²⁵ The Street Railway in Massachusetts, pg. 10.

²⁶ The Street Railway in Massachusetts, pg. 12.

²⁷ The Street Railway in Massachusetts, pg. 15.

²⁸ The Street Railway in Massachusetts, pg. 13.

always have plenty of demand, and that like Easton said so many years before that the lines would turn a profit eventually, many makers of rails, cars and signals were far too lenient, granting credit or taking payment in heavily watered stock.²⁹ The equipment sold by manufacturers such as Westinghouse or Pullman also depreciated slowly during the late 19th century and maintenance costs were generally low, in fact some questionably profitable traction companies managed to pay dividends only by depriving their physical plant and rolling stock of routine trips to the shop. Money saving initiatives undertaken by transit companies such as larger cars operated by a single man did not pay off when compared with the labor needed to improve and maintain roadbeds and rails for the heavier cars.³⁰ One of the most damaging things to the transit industry was the introduction of government arbitration boards during WWI, which invariably voted to raise worker salaries. Salaries for these positions had already tripled between 1900 and 1913 and this served to bite heavily into transit revenues.³¹

Used to the deflationary economics of the late 19th century, where stock watering, rapid expansion, and deferred maintenance had failed to take its toll, many traction companies were caught in situations where municipal control was their only option. Like the Internet and software companies of the 1990's, transit companies enjoyed a brief, though slightly longer window where everything they touched turned to gold. Like the traction companies, like the dotcoms, were skilled at making it seem like they had adequate capitalization when in many cases they did not. Considering how rapidly economic factors changed following WWI, looking backwards, municipal control over transit systems

²⁹ The Street Railway in Massachusetts, pg. 21-22.

³⁰ The Street Railway in Massachusetts, pg. 23 & 94.

³¹ The Street Railway in Massachusetts, pg. 105.

seems almost inevitable. This phenomenon is perhaps summed up best in the following quote concerning a failed Massachusetts street car company, "the plan was hastily devised by two bankers...no thought seems to have been given to how large and heterogeneous a system could be handled."³²

Given that we now are now grounded in the political and economic climate of the late 19th and early 20th centuries, we can now launch into specific discussions of the complex political and financial activities that gave rise to the transit networks of Boston and New York.

By 1865, New York was had a higher density than London, metropolis for a global empire. Expansion and the density of the city had taken a severe toll on metropolitan transportation. Urban transit schemes of various kinds had been proposed in the city since the 1840's, but now the issue was pressing and two key questions were how to remove the traditional and legal barriers to practical mass transit and what body ought to have control over creating such a system.³³ Below 42nd Street, traffic problems were particularly acute as full sized railway steam engines were forbidden by law to come any further into downtown. By the late 1860's, with New York in a race with Boston and Philadelphia for population, and hence tax base, the need for something to supplant the horse cars which ran in New York on a variety of franchises and without any real coordination.³⁴ Private citizens of the middle class such as subway booster Simeon Church could be found agitating for rapid transit, making the well-known links between transit, health and order, as well as publishing disturbing statistics that New York's population density was well above "safe" European

³² The Street Railway in Massachusetts, pg. 43.

³³ Charles W. Cheape, Moving the Masses: Urban Public Transit in New York, Boston and Philadelphia - 1882-1912, Cambridge, MA, Harvard University Press, pg. 21.

³⁴ Moving the Masses, pg. 25-26.

standards.³⁵ As we have seen earlier, raising large amounts of ready money for large-scale construction projects was difficult in 19th century America, in New York. Subway and elevated systems were twenty times as expensive per mile as horse car lines, and often the very people who had such capital, downtown business men, feared the damages done to their buildings by the construction of such systems. New York's political system was an unwieldy beast for the investor especially as period cycles of openly corrupt and reform government placed differing degrees of priority on their own projects.³⁶ Such cycles had sapped the faith of many New Yorkers that their city government was capable of such an enormous undertaking. The general wisdom dictated that matters such as the routing, finances, choice of motive power and engineering of any potential system be left up to private investment and ingenuity.

The city government, however, began to shake of its cobwebs under the direction of middle class businessman and reformist mayor William Wickham. Between 1874 and 75, at the recommendation of a blue ribbon panel from the American Society of Engineers, Wickham oversaw the creation of New York's Rapid Transit Commission, hereinafter R.T.C. This commission was to oversee the creation of routes for a transit system, specifically with an eye to connecting downtown with the isolated steam service up on 42nd Street.³⁷ Despite the promising nature of this commission its main action was to give clearance to existing private enterprises, the Manhattan and Metropolitan elevated railroads, powered at that point by small steam engines, to make the desired connections. The two elevated systems colluded, bought out the stock of the R.T.C.'s chartered company, but this did have an important impact. The El systems provided New

³⁵ Moving the Masses, pg. 28.

³⁶ Moving the Masses, pg. 20.

³⁷ Moving the Masses, pg. 32-33.

York with its first real glimpse of rapid transit mobility and the commission had been essential in breaking up objections by downtown landlords to construction. Further, with such restrictions removed, the R.T.C. was able to create a climate in which investors were more likely to risk their capital on rapid transit. As was mentioned earlier, imported capital from Europe, mobilized in this case by investor Cyrus Field, for the amount \$18, 000, 000, was key to the building of the Metropolitan Elevated lines. Significantly, the loans taken out by the Metropolitan were paid back in company stock and bonds.³⁸ This was the brief golden age of steam powered elevated rapid transit in New York. The Manhattan Elevated, despite being called "not well run," by J.P. Morgan's book keepers did well and between 1878 and 1890 turned a good 6% profit, one that was augmented by the adoption of a five cent fare.³⁹ The elevated systems however would prove to be only a stopgap measure in New York City. Their steam power for one thing worked against them. The Forney steam engine was small and light, perfect for pulling up to three elevated cars, but not many more. Every time a steam engine pushes forward its pistons to move the wheels forward this causes a brief, but powerful push downward on the roadbed. For steam railroads on the ground, this was merely a problem to be solved by regular rail replacement, but it meant major difficulties for the El. Nobody in New York wanted the heavier, more muscular elevated structures needed to bear the forces of larger steam engines and as such El trains could not be readily expanded, thus overcrowding again became a problem.⁴⁰ This relatively unknown, but essential technical issue with the elevated system created a brief, but economically

³⁸ Moving the Masses, pg. 35.

³⁹ Moving the Masses, pg. 36.

⁴⁰ Moving the Masses, pg. 38.

interesting and politically tangled renaissance for the surface transit industry in New York City.

The horse car franchises of New York had been parceled out with little thought for their quality or the practicality of their routing. Once the franchise had been granted, there was little the city government could do to correct abuses by the horse car company, especially in the area of stock watering. An 1884 law which attempted to rationalize the laws concerning street traction was put into effect, but without termination clauses, or any power given to the city to compel extensions of service, written into the franchise agreements, stock watering, and poorly coordinated service remained the norm.⁴¹ Accordingly, when the elevated system began to experience its overcrowding problem, the electrified and cable systems that replaced the horse car operations on the streets of New York were guilty of similar abuses, and with greater investments in technology eventually found themselves in hotter financial water.

In the early 1880's one of the chief horse car barons of New York City was Jacob Sharp. Sharp owned many short lines throughout Manhattan, but at no point did he consider rationalizing them into a coordinated transit empire, as did future urban transit magnates. In 1880, the city offered a franchise to operate some sort of transit system on lower Broadway. Sharp saw it as just the place for his horse cars, but a high tech start-up using cable car technology was also bidding for the lucrative position. The principle players in the opposing New York Cable Company were Wallace C. Andrews and H.H. Rodgers, both involved with Standard Oil, and William C. Whitney, brother of Boston transit magnate Henry Whitney. William was particularly useful to the Cable Company as he had excellent ties with the New York Democratic Party.⁴² Sharp, a man

⁴¹ Moving the Masses, pg. 43.

⁴² Moving the Masses, pg. 45.

used to doing business with the powerful city councils of an earlier era bought New York's aldermen at \$25,000 apiece to ensure his victory. However, Whitney's lawyers leaked the information to the New York Anti-Monopoly League who roused the abutters of the proposed route who promptly sued Sharp and had him removed from the running. As mentioned earlier, the middle class, and its associated political and non-political organizations as well as its trades, such as the law, were able to coalesce to have a powerful effect on the way transit systems were created.

Those who would run groups like the Whitney syndicate represented a fundamental departure from men like Jacob Sharp. Unlike Sharp with his disjointed collection of horse car lines, the new transit moguls represented a technical class and brought with them to street railroading a conscious desire to emulate the management systems of steam railways.⁴³ The new transit empires were monopolies with a purpose beyond merely getting rich; rather they represented an effort to rationalize systems and city to create a network that was not only profitable, but also efficient. In New York, both the Elevated Railroads as well as the streetcar systems looked to create lines which mimicked the structure employed by railroads, with trunk lines along principle avenues and branch lines diverging down smaller avenues and streets.

To return to the Whitney Syndicate, the company's efforts to control more and more of New York's street transportation were going full speed. Whitney created Metro Traction, incorporated in New Jersey, which had more lenient corporate laws. Metro Traction served as a dummy company which acted, sometimes as a construction firm for the Whitney group, but also, and more importantly as a clandestine business engine that aided in consolidating trolley

⁴³ Moving the Masses, pg. 48.

lines. This dummy company gave Whitney and many of his close associates' excellent chances for insider trading. This was certainly not the only such company of this type in the boom era of rapid transit, and many players in the transit industry got rich off of them.⁴⁴ As was mentioned earlier, as the New York elevated system's volume could no longer be expanded, and many streetcar companies, especially those far from the El tracks were doing well financially. Lines like these that Whitney could not easily buy, his syndicate leased. Unlike some elements of streetcar line consolidation that proceeded under an expansionist mindset and bought lines assuming that they would naturally turn a profit, Whitney's choice to lease lines at the edge of his dominion seems to be smart business. It did not saddle the syndicate with the debts of the leased system, but allowed the monopoly to operate with coordinated feeder lines as well as with relaxed competition.⁴⁵ However, this is not to say that the Whitney syndicate did not buy some lines outright and take on their debts and watered stock, in fact the New York Cable Company's own stock was heavily watered and based on anticipated earnings, rather than real capital investment. One of the key problems of buying lines meant raising the company's fixed costs still higher in an industry where fixed costs were already high. Even Whitney's New York Cable Company was dependent, like many other transit enterprises on constant growth; these seemed to be no real planning to exist in a steady state.⁴⁶ By 1907, Whitney's consolidation was in serious financial trouble. The subway, which had begun operating in 1904, had serious cut into revenues, and electrification had given elevated railroads a new lease on life. The five cent fare and universal free transfer, carrots given to the public to increase ridership could

⁴⁴Moving the Masses, pg. 51.

⁴⁵Moving the Masses, pg. 53.

⁴⁶Moving the Masses, pg. 56.

not easily be taken away, and deferred repairs were also causing the syndicate serious problems. Like the elevated and subway systems in New York, Whitney's empire would ultimately end up in the hands of the city government.

The electrified subway, which would ultimately help to lay Whitney's transit monopoly low also, had a complex and troubled birth. Often rejected by the city's politicians and capitalists as the most difficult, most disruptive and most expensive transit solution to build, the subway really began to take shape in 1891. New York's R.T.C, after surveying the problem voted to construct a four track mainline supported by bedrock, rather than building a two-tiered system with one tunnel riding atop the other. This was designed to avoid the issue of the elevated and allow for long and heavy trains to operate with adverse effects to the structure.⁴⁷ Mayor Hugh Grant turned to an 1875 law and revised it to allow the city to aid in subway construction financially as well as control the project's sinking fund. For subway boosters, like Simeon Church, the future suddenly looked bright. The R.T.C. offered a franchise to private investors to construct and run the subway, but the cost was steep. The city required a \$3, 000, 000 surety bond, a fixed five-cent fare and a five-year timetable to complete the route on pain of forfeiture. There were no takers.

The subway had proven itself to be too much of a challenge for traditional methods in which the government merely removed a few blockages to private investment. The state legislature moved to add members to the R.T.C., which included the Mayor of New York, the city Comptroller, an office dominated by the new technical middle class, and the President of the Chamber of Commerce. The R.T.C. then moved definitively to set out conditions under which contractors would be reimbursed for their labors, in this case through the sale of a municipal

⁴⁷Moving the Masses, pg. 74.

bond,⁴⁸ a key stumbling block in the original franchise offer.⁴⁹ In 1897, the New York State Supreme Court put its stamp of approval on the original four-track subway plan. It also cleared the reimbursement plan for contractors, provided that a security bond of \$15, 000, 000 with double sureties was in place, however, the R.T.C. subway was not out of the woods yet. As was mentioned earlier, cities of the era went through periodic cycles of reform and machine government and in 1897, a new Tammany mayor, Robert Van Wyck, an avowed foe of the commission took office. Van Wyck first attempted to replace the R.T.C. with a bipartisan board, but public outcry and the condemnation of the governor quickly laid that plan to rest. The mayor then switched to a more legitimate tactic pointing out the consolidation of the five boroughs into greater New York had brought the city dangerously close to its debt ceiling. This managed to stall subway construction until 1899 when a reassessment of the city's property removed this final objection.⁵⁰ Bids for the subway began January 15th, 1900, with yet another impressive set of stipulations. The City of New York enjoyed first lien on all rolling stock. The bond for construction was \$5, 000, 000 with a \$1, 000, 000 permanent performance bond, and \$1, 000, 000 in cash and securities to cover damages. The subway, running over its four tracks was to provide fourteen mile an hour local trains, and thirty mile an hour expresses, stations were to well heated, ventilated and drained. The bid was won by John McDonald, a contractor well known for his work on railway tunnels in Baltimore, with a bid of \$35, 000, 000. In what almost turned out to be a tragedy, McDonald's surety company pulled out at the last minute leaving him unable to fulfil the contract.⁵¹ However, August Belmont, Jr. gave his financial backing

⁴⁸Moving the Masses, pg. 90.

⁴⁹Moving the Masses, pg. 78.

⁵⁰Moving the Masses, pg. 86-87.

⁵¹Moving the Masses, pg. 91.

instead and made himself New York's subway impresario. Belmont chartered Rapid Transit Subway Construction to build the system, and the Interborough Rapid Transit Company, or I.R.T. to run it. Belmont enjoyed excellent financial connections, Rothschild's European millions, as well as cozy relations with New York's Democratic Party. Belmont, invariably a man of his times, saw the need to emulate steam railways and purposefully underbid on the contract to link his subway into Brooklyn as it provided him with a much-coveted feeder line.⁵² The first section of the I.R.T. running from the Battery to Harlem opened in October of 1904. In 1905, the Metropolitan Elevated and the New York Cable Company were both absorbed by the I.R.T. placing all systems under unified private control. The entire system was set up to compliment its various different parts and operated exactly like a steam railroad.

Following WWI, however, high fixed costs, inflation and the automobile all combined to through this balance out of alignment and drive the I.R.T. into receivership. A victim of its own success, the subway had to build longer and longer lines into sparsely settled areas, with the car this would prove to be pure financial poison. However, one peculiar aspect of the subway system's fortunes, a unique combination of political and economic factors would ultimately place it under municipal control. The fault, in the case of the I.R.T. seemed for once not to lie with management and their view of the economy. Belmont was a careful manager, who took pride in his system and was often seen riding it, not merely in his own private car, but on regular trains. He personally inspected stations and cars and might even be gently accused of micro-management.⁵³

⁵²Moving the Masses, pg. 92.

⁵³Clifton Hood, 722 Miles: The Building of the Subways and How They Transformed New York, New York, NY, Simon and Schuster, 1993, pg. 121.

In this case, the city government of New York, in the firm grip of reformist progressivism, in which big public works were key to diffusing what they saw as a population bomb, was responsible for bringing on the transit system's troubles.⁵⁴ In 1908, the Public Service Commission, which had replaced the R.T.C. and was granted broader planning powers, unveiled a plan for greatly expanding New York's subway system. The city planned system was to be used as a club to beat the I.R.T. monopoly and would consist of 144 miles touching far Brooklyn, Manhattan and the northern Bronx; loops at major bridges along the East River were also to aid in relieving areas of chronic congestion.⁵⁵ Edward Basset, a member of the P.S.C. and central figure in what became the dual contracts or I.N.D. subway, was an archetypal early city planner in the years after the 1893 World's Fair. Basset saw good subway design as central to economic growth and for the health of the city, decanting the urban poor into the suburbs, and rationalizing land development at the city's periphery without damping private investment in that development.⁵⁶

On October 20th, 1910, the P.S.C. set out the first bids for their massive undertaking, originally known as the "Triborough system." It took ten days to accumulate seven bids, and all of them relied heavily on public money. New York capitalists were leery of the project, not being particularly thrilled by the thought of such heavy dependence on city funds, but the reform wing of the urban government were clamoring that city funds be used to prevent another monopoly from forming. William Willcox, the leader of the P.S.C. was unable to arrive at a decision until November 18th when a bold southerner made him a unique proposal. W.G. MacAdoo had attempted to corner the trolley systems of

⁵⁴722 Miles, pg. 135.

⁵⁵722 Miles, pg. 136.

⁵⁶722 Miles, pg. 138.

Knoxville, Tennessee, but had been sent packing. Arriving in New York, he had rebuilt his fortune by completing a languishing tunneling project to connect New York to New Jersey beneath the Hudson River. MacAdoo proposed to Willcox that he could really inject some competition into the New York transit world if he would build the Triborough system in such a way that it connected with the MacAdoo New York/New Jersey tubes. This would have created a truly regional transit system and made good sense. With the Triborough system attached to New Jersey, the I.R.T. might be pushed into expanding its peripheral lines to keep pace; something Director Belmont was often loath to do.⁵⁷ Clearly, MacAdoo's plan was at least well enough conceived to provoke swift action from August Belmont. Belmont offered his own, somewhat unattractive proposals for expansion to Willcox. This bought the I.R.T.'s director critical time and prevented New York capital from siding with MacAdoo, who in a financial race with Belmont was seen as the wrong horse to back.⁵⁸ The whole Triborough system appeared completely stalled. The picture again shifted suddenly when Edwin Winter, the director of independent Brooklyn Rapid Transit, which had made considerable money operating the elevated network of that borough made a proposal for expansion. His plan would rectify the tangle of his own lines, which had been acquired slowly and over a period of years, and also gain valuable feeder lines into Manhattan.

The man who finally managed to rationalize the various competing plans was George McAneny, the borough president of Manhattan. McAneny was also a reformist progressive and was greatly influenced by Burnham's 1905 Plan for Chicago. For McAneny, excellent transit would rationalize the unpleasant urban

⁵⁷722 Miles, pg. 145.

⁵⁸722 Miles, pg. 148.

Street, the principle artery in downtown for carrying trolleys at the time, became a serious issue, and Bostonians began to wonder about whether or not they too might soon be getting an elevated system. The West End's 1890 annual report contained references to the company's desire to construct and operate an El, something it saw as key to a stout financial future. Legislation giving the West End a green light to do so had been passed in the city council, but it was suspended, "pending government review," in 1891. Ultimately it came to naught, probably because Whitney withdrew his dynamic leadership when he resigned his presidency in 1893 to return to the world of steamships.⁶⁹

Bostonians had been thinking about elevated systems since 1879 when New York's began to blossom, but both Boston businessmen and lawmakers saw Manhattan's system as something to avoid, especially in Boston's narrow streets.⁷⁰ One palatable alternative to the New York elevated with its heavy trestle and sun-blocking roadbed was a system proposed by Civil War veteran Joe Vincent Meigs. Meigs had incorporated his elevated railway company in Boston in 1884. His charter, regulated by the Railway Commission contained provisions to prevent him from building a New York style system as well as prohibitions on watering his stock. By 1886, Meigs had a working prototype of his cylindrical, steam driven, monorail elevated train running on the drained bed of Miller's River in East Cambridge. The system, though run by a thoroughly convention steam engine rode on one set of "bents" or supports, did not seriously block sunlight from shining down into the riverbed, and would have been ideal for corners and sharp turns of which Boston had plenty. However, Meigs, plagued by suspicious fires and chronic lack of capital never quite got his plan

⁶⁹Fifty Years, pg. 34 & 36.

⁷⁰Fifty Years, pg. 39.

jungle of the 19th century and create a truly livable city. A so-called corporate liberal, McAneny felt that business and government need not be antagonistic and could work together for the public good.⁵⁹ Accordingly, McAneny planned a system in which the I.R.T. and the B.R.T. would be jointly responsible for construction of the Triborough lines, with a slightly larger amount of the financial burden falling to the I.R.T. as a way to reward the B.R.T. for running more peripheral lines. The B.R.T. was to shoulder 140 million of the construction costs, and the I.R.T. 161 million, and both companies were to pool their revenues from existing operations to support the construction. This was to be done in return for good lease agreements; they ran for forty-nine years, on the new tunnels, to be built by the city.⁶⁰

The arrangement turned out to be beneficial for New York's subway commuters, especially those coming in from the periphery, and in the long term, it has allowed New York's subway traffic to keep growing throughout the 20th century, only now in 2002 is another major expansion seriously up for discussion. However, it proved to be detrimental to the privately owned I.R.T. and B.R.T. The two companies that had been clearing \$6 million and \$9 million a year respectively would both go into receivership under the dual contracts, both shortly after the close of WWI. In the case of the I.N.D. lines, the city had mandated the kind of suicidal expansion that other transit companies had done for themselves.

What was the situation in Boston? As we have seen in previous chapters, it had many similarities and many differences. Boston enjoyed a unique alliance between Yankee and Irish elements as well as a tradition of government

⁵⁹722 Miles, pg. 151-3.

⁶⁰Brian J. Cudahy, Under the Sidewalks of New York: The Story of the Great Subway Expansion that Saved New York, New York, NY, New York University Press, 2001, pg. 53.

involvement. Having surveyed New York, let us turn our focus northward to the capital of Massachusetts.

Until the 1880's, Boston's transportation needs were handled comfortably by horse cars and by steam railway service. Unlike New York, steam engines in Boston could come right into the heart of downtown. However between 1880 and 1890 the amount of people commuting with streetcar transportation skyrocketed and by 1890 only 1/5 of Boston commuters were regular steam service riders.⁶¹

To begin with, the city of Boston had very different relations with its horse car system. A horse car franchise was not *carte blanche* for the horse railway, but were in fact a permit subject to state regulation. Created in 1869, the state's Board of Railway Commissioners could easily take any horse car franchise it felt was not living up to its promises to task. Some of the sins of heavy stock watering were curtailed by this body which had the power to approve or forbid bond issues by any railway operating in the commonwealth. Further, the geography of Boston had forced consolidation of the horse car companies as early as 1866. The "sacred spaces" of the Public Garden and Boston Common, meant that horse car, and later systems, could only enter Boston from bridges over the Charles River, in the northwest and Washington Street in the south. These natural funnels made it physically impossible for the multitude of service providers that existed in New York to exist in Boston. However, the geography of the city also forced cooperation between the remaining large providers, as each had to share several miles of tracks when entering the central city. By the mid 1880's, traffic was increasing and the miles of shared track filled with

⁶¹Moving the Masses, pg. 108.

jumbled horses were causing serious traffic problems, by 1885, Boston's push to be rid of horse dependent city transit was under way.⁶²

The timing of when Boston's horse cars reached their maximum volume was crucial to the way transit in the Boston area developed. Unlike New York, Boston avoided the stopgap measure of steam driven elevated roads, going directly to electric street trolleys and then to electric subways and elevated systems when the electric surface systems reached their maximum capacity. Further, Boston avoided experimentation with cable systems which, thanks to the shared tracks near downtown was entirely unworkable.⁶³

Boston's transit mechanization began in earnest in 1886 when Henry Whitney, a former steamship magnate became involved in a real estate deal in the garden suburb of Brookline, Massachusetts. In Brookline, Whitney and his partners constructed a "European" boulevard with bridle paths, elegant townhouses on both sides and a streetcar line running down the center of the avenue. Whitney's plan netted him considerable profits and put him at the head of two transit companies, the West End Street Railway and the Suburban Street Railway, which acted as the principle feeder for the West End.⁶⁴ Efforts to coordinate his two lines and provide them with adequate feeders ultimately lead Whitney to purchase the Cambridge, Metropolitan and South Boston lines under the control of the West End. Like the William Whitney syndicate in New York, Henry Whitney organized his new domain like a steam railways, with divisions that roughly corresponded to the absorbed properties and kept experienced figures in positions of authority.⁶⁵ Perhaps one of Whitney's less adroit moves

⁶²Moving the Masses, pg. 112.

⁶³Moving the Masses, pg. 113.

⁶⁴Edward T. Dana, Fifty Years of Unified Transportation in Metropolitan Boston, Boston, MA, Boston Elevated Railway Company, 1938, pg. 17.

⁶⁵Moving the Masses, pg. 117.

was to have the first accountant of his new transit empire be an auditor from the steamship industry. How accounting for a street railway was done had not yet really been figured out, but by bringing in an expert from a better-known, but not necessarily parallel business, Whitney may have given his corporation a false sense of financial security.⁶⁶

With Boston's transit system under the control of the West End, Whitney set about getting the horse out of the equation. At first, no longer preoccupied with sharing tracks with opposing lines, Whitney favored cable technology, but the well-known 1886 demonstration by Frank Sprague in Richmond won Whitney over to electricity. Sprague earned a huge contract to electrify most of the West End's possessions, using the overhead wire trolley system. The city council had been against the overhead wires at first, but after a brief experiment with the conduit system, and a hair-raising 25 mile per hour trolley ride through city traffic from Frank Sprague, the council gave their consent to the overhead wires.⁶⁷ Keeping with standard industry practice, with mechanization under way, Whitney did away with zoned fares, introduced free transfer with all West End controlled lines, and introduced a five-cent fare. From the outset, trolley cars proved cheaper in Boston than horses. By 1894, the electrified cars made up 90% of all the transit traffic in Boston and operating costs had fallen from 75.1% of the gross revenues, using horses, to 64.1% using electricity.⁶⁸

The West End kept pace with suburbanization, introducing longer routes, larger cars and cross-town lines. The Massachusetts Railway Commission kept the company from watering its stock and the system prospered, greatly increasing its traffic in and out of downtown. This traffic, especially on Tremont

⁶⁶Fifty Years, pg. 18.

⁶⁷Fifty Years, pg. 22-23.

⁶⁸Moving the Masses, pg. 119.

off the ground, despite its complete approval by civil engineer and Civil War veteran, General Stark.⁷¹

Returning firmly to our chronology, in 1891, the state legislature created Massachusetts's first Rapid Transit Commission. The commission decided that ten miles out from city hall, was the Boston metro district to be served by rapid transit originating in the central city. They also mandated north and south union stations, and street widening in areas heavily trafficked by streetcars. The R.T.C also found that Boston's transit traffic was essentially doubling every ten years, which made the need for action all the more dramatic.⁷² In the same year, Bostonians elected Brahmin Mayor Nathan Matthews. Matthews was the first to wield effective power under an 1885 law which had dramatically reduced the abilities of Boston's city council and appealed broadly to both Yankees and Irishmen thanks to Patrick Maguire's "respectable Irish machine."⁷³ Matthews tackled the city's transit traffic jam headfirst. Quickly reaching an agreement with the state government to share appointing powers to the R.T.C, Matthews successfully defused tensions between the city and the state. Having done so, he sent representatives on a summer tour of London, Glasgow, and Berlin's transit systems to see what might be appropriate for Boston. Out of what they saw in Europe, the two transit commissioners, Howes and Fitzgerald, liked London's shallow subways, as opposed to the tube, and Berlin's elevated system the best. In accordance with the medical dictates of the era, which stated that tuberculosis sprang from sudden changes in temperature, Howes and Fitzgerald reported that shallow subways like that of London would be healthy for citizens in the urban core. Elevated railways like those of Berlin would be healthy as well as

⁷¹Fifty Years, pg. 41-42.

⁷²Fifty Years, pg. 43.

⁷³Moving the Masses, pg. 128.

financially less burdensome in Boston's less dense areas.⁷⁴ In terms of financing such a system, the R.T.C. looked into what modifications might be made to the 1889 law which had allowed the use of public funds to create Boston's first comprehensive water and sewer system. This would give the commission the power to buy land, widen and extend streets, and purchase rights of way with the charges sent to the served towns on the basis of their populations.⁷⁵ In addition to this, the R.T.C. proposed that such a system be under direct public control. Here is one prime example of the key differences between New York and Boston's political scene; it is doubtful that this total public control scheme would have been floated in New York until the progressive era was well under way.

However, no transit solution which featured an El seemed to have a satisfactory way of dealing with the Boston Common and so in 1892, Mayor Matthews changed directions and decided to leave rapid transit between the core and periphery to private interests for the time being. Instead he appointed three of his R.T.C. members to draw up plans for a subway under Tremont Street. The Tremont Street Subway was not a total city transit solution like New York's elevated systems or the dual contracts. However, it did act as a coronary bypass for Boston, diverting the "trolley blockade" underground, but allowing it to flow along the same route and arrive at the same destinations.⁷⁶

Mayor Matthews' plan proved acceptable, especially among urban Bostonians, who had felt that an elevated railway would have mostly favored suburbanites. The Boston Yankee-Irish alliance prevented the kind of stalling which had held up the I.R.T. and the R.T.C. soon had its plans under way. The

⁷⁴Moving the Masses, pg. 130.

⁷⁵Moving the Masses, pg. 131.

⁷⁶Moving the Masses, pg. 136 & 138.

total cost of building the Park Street Tunnel was \$3.5 million for construction and \$1.5 million for damages. A municipal bond issue was to create the needed capital for the work with the "rental fee" from transit companies using the tunnel paying off the four- percent interest bond.⁷⁷ Senior health specialists from Massachusetts General Hospital were called in and the drainage and ventilation plans for the tunnel cleared as healthy and without undue hazard.

With construction begun in 1894 on the Tremont Tunnel, work went swiftly. The Massachusetts Supreme Court was favorable to the project and the R.T.C. submitted frequent and detailed progress reports, which generally managed to stifle its foes. By 1897, the Tremont Tunnel was completed and the common restored beyond anyone's expectations, even the excavation of a colonial cemetery had been handled with care and respect. The West End Street Railway, the only real transit concern in the city was granted the lease for the tunnel, but when it attempted to raise its fares to pay for the lease had its efforts curtailed by the Massachusetts Railway Commission. Nonetheless, West End streetcars were utilizing the tunnel, which had greatly contributed to a general upswing in property values along Tremont Street.⁷⁸

The congestion in central Boston had been remedied, but Boston suburbs, which had been growing since the 1840's still needed rapid transit. The Boston Elevated Railway Company, which had hoped to use the Meigs system, had been incorporated in 1894, but had lain fallow for some time due to lack of funding. However, in 1895, J.P. Morgan had bought the franchise and assigned it to Boston brokerage firm Kidder Peabody. Kidder Peabody, Morgan realized had the local cache to mobilize Boston capital, and indeed it did. A number of disgruntled West End share holders, dismayed at how the West End had ignored

⁷⁷Moving the Masses, pg. 139.

⁷⁸Moving the Masses, pg. 144-145.

the elevated franchise and had instead concentrated on coordinating its street operations, bolted the West End and threw their allegiance to the Boston Elevated Railway Company. In a surprising upset, in a single 1896 corporate vote, the West End became the leased puppet of the Boston Elevated Railway.⁷⁹ The BERY assumed the West End's debt and tax burdens, but the West End continued to shoulder the burden of "additions and betterments chargeable to capital."⁸⁰

Wasting no time, the Boston Elevated Railway, hereinafter BERY agreed to the R.T.C.'s plan to run their elevated lines in Boston less dense northern and southern neighborhoods and run a tunnel down Washington Street in Boston's business center. Washington Street was an especially convenient spot, because it paralleled the Tremont Tunnel and would allow trains from the elevated to use the Tremont Tunnel as a temporary route through downtown.⁸¹ The Railway Commission voted to allow them the use of the tunnel and helped the BERY locate routes and stations, provided they forsook steam power, and maintained a five-cent fare.⁸² By April 29th of 1898 plans for the elevated railroad running from Sullivan Square in Charlestown, over a new Charlestown bridge into Boston, via first the Tremont Tunnel and after its construction the Washington Street Tunnel, thence down Washington Street to Dudley Square, and including an Atlantic Avenue loop, had been approved by Mayor Josiah Quincy III. The state's Railway Commission granted its approval in July and the first girder was swung into place at Dudley Station on January 23rd, 1899.⁸³

⁷⁹Moving the Masses, pg. 147.

⁸⁰Fifty Years, pg. 50.

⁸¹Moving the Masses, pg. 150.

⁸²Fifty Years, pg. 50.

⁸³Fifty Years, pg. 57 & Craig Semsel, "Building the Mainline Elevated," Boston, MA, Northeastern University Masters Thesis, June 1st, 1989, pg. 31.

Construction of the separate elevated sections in Roxbury and Charlestown went on at a quick clip and the last girder was placed on April 12, 1901. Training began at that point to familiarize crews with their trains as well as the complex electro-pneumatic block signal system. In addition, the elevated, which was the high tech marvel of Boston for the era, featured telephone and telegraph service between all stations to allow the twenty-two man signal crew to keep in touch.⁸⁴ Each line station had a crew of four men, two sold tickets and two manned chopper boxes, which shredded the tickets as patrons passed through to the platforms. From the start, we can see that the Boston elevated was a labor-intensive organization. The cars themselves were wooden, with two central doors, 48 seats and standing room for 162 passengers. However, as was mentioned earlier, equipment during this era became obsolete quickly, and steel cars with two sets of doors were running on the elevated by 1906.⁸⁵

The terminals at Sullivan Square and Dudley received significant artistic attention in their construction as has been discussed in the previous chapter. The stations were also, "union" stations in that they served as collection points for Boston's northern and southern streetcar networks, which were quite extensive. Indeed, considering the industry wisdom at the time concerning the need for coordinated feeder lines, Dudley and Sullivan Square, both placed at junctions which originally served horse cars, were guaranteed moneymakers. On June 9th, 1902 at 5:30 AM the first train set out from Sullivan Square Terminal.⁸⁶

Crowds mobbed the El stations throughout the day, and into the days ahead, traffic was more than the BERY's hopes had dared to be, and quickly the drawbacks of operating the heavily loaded El trains in the Tremont Tunnel

⁸⁴"Building the Mainline Elevated," pg. 36.

⁸⁵Fifty Years, pg. 58.

⁸⁶"Building the Mainline Elevated," pg. 42.

proved themselves apparent. Steep grades made operation in the tunnel difficult for the bulky elevated cars and they wore through the rails located at the tunnel's several sharp turns in roughly forty days, requiring a steady supply of replacement rails until special manganese rails could be brought in to withstand the pounding. Between July and September of 1902, the BERY and the R.T.C. hammered out an agreement for a dedicated tunnel under Washington Street and by early 1903, the state Railway Commission had also agreed to the Washington Street plan.⁸⁷ By 1904, standard legislation in which the city built the Washington Street Tunnel, and the BERY operated and equipped it had been cleared with the state, and on November 30th, 1908, operations of elevated cars in the Tremont Tunnel ceased.⁸⁸ The Tremont Tunnel was returned to entirely streetcar operation and the basic framework of Boston's current urban transit network was in place.

Improvements continued following the 1908 Washington Tunnel which included the 1912 southern extension of the elevated to Forest Hills, and the 1911 introduction of alternating current to power the electricity hungry elevated cars. A subway to Cambridge, vetted by the R.T.C in 1906 and completed in 1912, using only BERY funding, served to rationalize and collect the profitable street car traffic of Cambridge, Belmont and Arlington, but the cost to the system were high, \$1, 000, 000, 000.⁸⁹ Also in 1912, another privately funded project allowed trolley cars to reach East Cambridge, via North Station, over the reinforced concrete Cambridge viaduct. The service using the dedicated viaduct was seven minutes faster than riding on the street and is still in use today.

⁸⁷ "Building the Mainline Elevated," pg. 44.

⁸⁸ "Building the Mainline Elevated," pg. 63.

⁸⁹ Fifty Years, pg. 65 & 69.

However, despite a better working relationship with the Boston City and Massachusetts State governments, the BERY ran into trouble. Though it appears to have been generally better run and thought through than some of its New York counterparts, it did expand heavily, using its own money during the second decade of the 20th century. By 1918, the rolling stock, especially that of the street car division was showing severe wear and tear and the locked in nickel fare, which the BERY had lobbied for itself, was far from providing enough revenue to keep the private company afloat. July 1st, 1918, municipal control of the Boston Elevated Railway began.⁹⁰ Though the company kept its name, and continued to pay a fixed seven percent stock dividend to its shareholders, it was run by a group of city and state appointed trustees, who essentially ran the BERY as it had the West End Street Railway.

During the late 19th and early 20th centuries, immigrants from southern and central Europe flooded into the Atlantic port cities of Boston and New York. Established white citizens there, disturbed by their new neighbors and pushed by industrialization began to head for the urban periphery in record numbers. Concerned with creating good Americans out of the new arrivals they felt that the best way to deal with the immigrant was to remove him from the choked urban neighborhoods where he made his home and allow him to live the American middle class life in the suburbs. However, American cities of the late 19th century were profoundly different worlds than they had been merely twenty years ago in the 1850's and 60's and to provide them with coordinated rapid transit took governmental and economic steps which were only arrived at by trial and error. Sometimes corruption hampered the creation of transit systems, other times, the very economic competition that theorists felt would

⁹⁰ Fifty Years, pg. 79-80.

remove that corruption was the culprit, but the ultimately the systems were built and generally quite well. Nonetheless, economically, nobody was sure how to create transit networks, which could exist in a steady state without repeated expansions. With the advent of post war inflation and increasing automobile ownership, transit providers in Boston and New York found that despite their far-reaching peripheral routes, clamored for in the years before the war, their beautiful stations, railroad like organization and comfortable rolling stock, they were in fact broke. Municipal control arrived to stay in both Boston and New York in 1918 the same year the armistice ending WWI was signed; the gilded age was over.

Chapter Five: Conclusion

By 1920, the boom era of rapid transit came to a close. Their revenues sapped by the emergence of a car culture in the suburbs that they had helped to found, many transit companies' improvement, especially on peripheral lines only left them deeper in debt. Internal economic practices such as watered stock, annexing lines, and deferring maintenance to help show profits, had also taken their toll and both Boston and New York's once robust transit giants were placed under public control. Aside from some of their devil-may-care economic aspects, and the advent of widespread car ownership, many transit companies were victims of their own success. The Boston Elevated Railway Company, as part of its agreement with the City of Boston to absorb the West End Street Railway had agreed to build a tunnel from Boston's waterfront, under the harbor to neighboring East Boston. Commuters from East Boston benefited greatly from service which accelerated the trip across the harbor; a trip that had previously been taken by ferry. However, one thing that neither the City of Boston nor the BERY had reckoned with was the decrease in traffic on the Atlantic Avenue elevated loop. The loop served the waterfront and once daily commuters could take the trolley from East Boston and connect directly to the rest of the transit network rather than the ferries the traffic on the loop became largely seasonal, peaking in the summer shipping season. Accordingly, service was discontinued in the late 1930's and the Atlantic Avenue loop removed in a scrap metal drive during World War II.

In New York, the dual contracts system gave the citizens of the five boroughs a truly comprehensive transit package. The New York subway now had many paralleling routes and extensions flung far away into areas which were truly suburban, but the debts undertaken proved too much for the I.R.T. and B.M.T. to handle with the emergence of the automobile. The very thing which transit advocates had claimed necessitated rapid transportation, the need to decentralized urban immigrant populations and decant them onto cheap suburban lots where they could become dependable and worthy Americans had in fact been carried out. However, the subways had created extensive avenues over which the dense population they needed to maintain healthy profits could decentralize creating an economic climate for which the transit industry was profoundly unprepared.

Regardless of whether one views the suburbanization of America with awe, disgust or some mixture of the two, rapid transit systems in dense eastern seaboard cities were both products of, and solutions to the perceived problems of an era. While such networks suffered in the booming twenties, they did enjoy an impressive resurgence in the 1930's and 40's when depression and war curtailed the expansion of automobile ownership, but continued to slide after the close of hostilities in 1946. In many ways, if one looks at the advent of rapid transit as a solution to the urban problems of the nineteenth century America, there are places like Hartford, Connecticut where, with the help of a General Motors takeover, the trolley system solved itself right out of existence. In Boston and New York, where subway and other rapid transit solutions held on, they experienced contraction, and stasis. Such systems have only begun to expand again in the late twentieth century, and certainly in ways, which are much more

cautious and certainly less ambitious than the massive transit schemes of the late nineteenth century. For example, Boston's Silver Line designed to take riders from South Station, coincidentally one of the union stations proposed by Boston's R.T.C. in the nineteenth century, to the new "Sea Port" district; a distance of perhaps a mile and a half and comprising only three stations. The new line is in the center of downtown and, barring disaster, poised to receive excellent ridership. However, in terms of length it is a spur track compared to the BERY at its height in 1917 and serves no outlying areas.

Some aspects remain unchanged. The goal of moving people in and out of the city is still met every day and especially in New York's case, the city would cease to function if that goal were not met. The use of art as a tool to mold new arrivals from Southeastern Europe into American citizens is over. The advent of the computer age and mass production has led to questions over what can still be considered art, and yet the importance of beauty as an element of comfort in the rapid transit world still with us. New York's latest subway car series, the R-142 has been designed so that "with a black mask around the [motorman's] window, a red shroud around the headlights, and a bright L.E.D. for the line number, the R-142 looks like a friendly caterpillar."¹ The professional great-grandchildren of the reporters who praised Beach's pneumatic subway or marveled at the first ride on the Beaux Art I.R.T. now praise the R-142 for its bright, but gentle light and easy-to-clean and highly reflective floor above which the car's comfortable seats "seem to float." The M.B.T.A's Green Line, the descendent of the West End Street Railway system also has new cars. The new trolleys feature bodies by the Italian design firm Breda and show that New York's subway system is not alone

in still giving a great deal of thought to how it's new rolling stock should look. My recent trip to the newly renovated Aquarium Station on the T's Blue Line revealed that the dimly lit cement and brick bunker of the 1970's had been replaced with brightly lit showplace of brushed aluminum benches, whisper quiet elevators and escalators, and terra cotta floors. The renovated station seems just as appropriate for boarding trains as it does for displaying new Macintosh computers.

Returning to the late nineteenth century, the era following the Civil War was one of tremendous change in America. Following the war, industrialization, urbanization and immigration from abroad, especially South central and Eastern Europe blossomed to change to the face of the United States permanently. Haunted by the idea that the new arrivals were changing America into something different from what they had known prior to the war, established white Americans sought to shape the immigrants, molding them into citizens like themselves and controlling the densely packed cities in which such immigrants lived. The principal agent of urban and immigrant control in both the Gilded Age, and the later Progressive Era was the principle of suburbanization. Suburbanization allowed established Americans a chance to live the pastoral ideal that had been ingrained in the national conscience since Thomas Jefferson and offered immigrants a chance to experience the ideal and participate in it, thus erasing their alien ways and inculcating American virtues within their population. The vehicle of suburbanization for the great bulk of Americans both established and recently arrived would be some form of rapid transit. As we have seen, the horse car provided a temporary, but ultimately

¹ Janet Abrams, *The New York Times*, Salient Facts: New Subway Cars, (October 1st, 2000.)

unworkable solution. Widespread mechanization briefly alleviated street congestions, but as suburban commuter populations climbed, electric and cable streetcars created their own traffic jams. The ultimate solution to the transit issues of the late nineteenth century would come in dedicated right-of-way rapid transit systems the elevated railroads and subways. Such solutions changed the face of American cities immensely. These complex undertakings challenged the abilities of government and finance. In governmental terms, the great era of rapid transit expansion, saw the rise of the technical middle class in politics, the growth of urban executive authority and extra-political lobby groups controlled by the middle and upper classes. In economic terms, the years between 1865 and 1918 pointed out some of the inability of American finance to rise to the occasion without government assistance, despite the frequently voiced desire to keep the government away from rapid transit. Further, the resulting transportation corporations failed to plan adequately for a post-expansion phase of operations in a striking parallel with the dotcom companies of a century later. Artistry that followed the taste crazes that swept America during the period in question also played a critical role in the development of transit systems. Artwork was a key component of the "civilization" process undertaken by the middle and upper class white citizens intent on changing the ways of the new arrivals. Further the use of undoubtedly costly and hard-to-maintain art showcases just how important transit proponents felt it to be as well as their misunderstanding of their own economic standing. In absolutely pure, concrete physical terms, the attachment of cities to their transit, as well as utility grids changed the nature of American urban life. No longer could downtown migrate as it had in Boston or dramatically grow outward, as opposed to upward, as it had in New York before

the advent of the skyscraper. Zones of working and living became separated and while the movement of ethnic groups and classes may have caused rent fluctuations, generally fixed.

It is nearly impossible to exaggerate the importance of the years covered by these writings to the United States of America, as we know it today. The industrial city emerged and changed the way people lived their lives. Transit systems were both a solution to the problems encountered by this change and an agent of this change. Heavy industry has greatly diminished in America's northeast. Cities like New York and Boston now play host to information and service sector industry. Tertiary economy employers such as banks, law firms and investment consultants now dominate the scene. Nevertheless, the transit systems are still there, moving people in and out, just as they were designed to do over a hundred years ago. In many places, the car, with its need for ever-wider highways and bigger parking facilities is proving to be an ultimately difficult and costly way to move commuters. Especially in the northeast, mass and rapid transit solutions seem poised on the threshold of a new boom era, one that will hopefully learn from the errors of the last. While there is little telling what the future of Boston, New York, and all of America's cities will be, there is no doubt that it would look very different, perhaps much worse, without rapid transit.

Monuments in Transit

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