The Rail of Two Cities

The influence of landscape and city character on rail rapid transit development in Washington, D.C. and Portland, Oregon

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I. Introduction

Over the past fifty years, both Washington, D.C. and Portland, Oregon have decided to make significant investments in rail rapid transit. There have been some similarities in the processes the two cities have gone through, with events in Portland typically occurring about ten years after similar events in D.C. (Figure 1). There have also been significant differences in the reasons leading to the decision to build rail and the process of designing the system.

The differences are due in part to the national context and the city’s stage of development at the time decisions were being made. When Washington, D.C. made the decision to move toward rail in the 1960s, the nation was at the height of its love affair with the automobile and suburbs were booming. The booming suburbs in a city that already numbered two million people meant that traffic congestion was already becoming severe. A decade later, when Portland began considering rail, the nation was in the midst of an energy crisis and the environmental movement was getting off the ground.

While national events certainly had an influence, many of the decisions were also shaped in large part by the individual character of the two cities, formed in response to their surrounding landscape and core function. Washington has few distinctive landscape features in its immediate vicinity, but has a distinct role as the Nation’s Capital. Portland is embedded in an area of great natural beauty. The character of each city thus reinforced the national trends.

The effect of these contrasting characters can be seen throughout the development of the rail transit systems. In both cities, the decision to build rail grew out of opposition to plans for extensive freeway construction, but the reasons for opposition were somewhat different in the two cities. Different reasons for opposition to freeways lead to different goals for transit. Different goals for transit lead to different planning processes, both in terms of organizational structure of the planning agencies and in the physical design. The physical design involves both
the placement of the routes and stations and the visual appearance of the system elements, which
has afforded the cities the most explicit means of expressing their distinctive characters.

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<td>1986 First line (Eastside) opens</td>
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*Figure 1:* Timeline of key documents (in italics) and important events

II. Self-perceptions

Both Washington, D.C. and Portland have very distinctive characters. The character of
each city incorporates elements of the role of the city itself and the relationship between the city
and the landscape in which it is situated. The two cities emphasize the functional and landscape
elements to different degrees, but both are very aware of the image they present to both residents
and visitors. That awareness influences the decision-making process in both cities and has
affected many aspects of the development of their rail rapid transit systems.
Washington, D.C. is, first and foremost, the Nation’s Capital, and its image is built around serving that role. As the National Capital, Washington serves a symbolic role as the heart of the nation, including providing a home for a variety of monuments, as well as a functional role as the seat of the federal government. Awareness of these roles comes through in nearly all of the transportation planning documents. Both the Mass Transportation Survey and the National Capital Transportation Act of 1960 include the objective of preserving the “beauty and dignity” of the capital city.¹ The functional role is also addressed in the Mass Transportation Survey, which describes the basic purpose of cities as bringing people together to conduct business, in the case of Washington, the business of running the nation.² Both roles are also reflected in the adopted regional plan for the rail system. The section describing the routes each line will follow includes photographs of places that will be served by each line, including the Pentagon, Smithsonian Castle, and the Capitol Building.³

In Washington’s case, the relationship between the city and the surrounding landscape is not as important as the role of the city itself. A good description of the city’s perception of its surroundings can be found in the Policies Plan for the Year 2000, which describes the area in the immediate vicinity of the city as generally lacking in barriers to development, while somewhat farther out there are natural amenities such as Chesapeake Bay, the Atlantic Ocean, and the Blue Ridge crest.⁴ The same document describes open space within the metropolitan area as necessary for recreation, but does not describe any specific qualities of such space.⁵ One element of the immediate landscape that may be expected to receive some attention is the Potomac River. The 1969 Comprehensive Plan does include the completion of a waterfront park system, but the river receives relatively little attention in most other planning documents.⁶
Portland, on the other hand, defines itself in terms of the beauty of its natural surroundings. The 1972 Downtown Plan explicitly defines “Portland character” as “rivers, parks, trees, topography vistas, and spirit,” and goes on to describe an image of downtown bounded by the Willamette River on one side and the West Hills on the other. The Willamette River is a key asset of the city valued by its citizens. The Citizens Advisory Committee that was a key part of preparing the Downtown Plan included a task force specifically dealing with the waterfront, as well as considering access to the river in many other aspects of their recommendations. The city also values the landscape of the broader region, particularly forest and farmland, and concern for preserving this landscape runs throughout the planning process.

One of the most eloquent statements describing Portland’s character and the influence that perception has on planning is contained in Mayor Neil Goldschmidt’s statement officially rejecting the Mount Hood Freeway:

Nestled in a rich and fertile valley, with a ring of hills at her back and an imposing mountain at her front steps, ours is a city rich in natural resources and natural beauty. It is a splendid – and in many ways – a fragile natural setting, the kind that can all too easily be abused and obliterated by technological arrogance….Beyond the artificial boundaries of Portland is the region of which we are a part….Shall the fertile acres of the Willamette Valley, the farmland and the orchards, be sacrificed to sub-divisions and shopping centers?

III. The Decision to Build Rail
Each city had its own reasons for deciding to make the investment in a rail transit system. The Washington region was already experiencing significant traffic congestion and rejected an extensive highway system as more of the same, seeing rail as a better way to move large numbers of commuters between the suburbs and downtown. Portland, in what can be seen as a reflection of its environmentally-conscious character, chose to build rail before congestion became acute. The city believed that rail provided an important means of shaping future development and reducing automobile dependence.
Opposition to Freeways

In both cities, the decision to build a rail system had its origins in opposition to transportation plans revolving around freeways. In each city, a region-wide plan for highway development was crafted as part of the interstate highway system. Opposition to the plans rallied around different points in each city, but the ultimate result of rejecting significant portions of proposed freeway development was the same. Thanks to a provision in the 1973 Federal Aid Highway Act, federal funds that were originally slated for freeway construction were able to be transferred to finance rail transit.

In 1959, the National Capital Planning Commission and the National Capital Regional Planning Council published a report based on a Mass Transportation Survey (MTS). The name is perhaps something of a misnomer, as the plans advocated in the report rely heavily on freeway construction. The study was intended to design a transportation system that would serve the Washington metropolitan region in 1980, based on an assumed population increase from 2 million to 3 million. The report further assumed that continued trends of dispersal in settlement and employment and increasing automobile ownership would lead to a tripling of person-miles traveled over the next twenty years.¹⁰ Starting from these assumptions, the report analyzed three general alternatives, one auto-dominated, one incorporating an express bus system, and one including rail transit. Due in part to difficulties in calculating traffic projections, all three alternatives included essentially the same highway system (Figure 2).¹¹ According to the analysis, “The effect of improved transit will be mainly to reduce highway widths, rather than to eliminate highways.”¹²
There were four general bases for opposition to extensive freeway construction: displacement, congestion, economics, and aesthetics. The November Report, which proposed an extensive rail system specifically as an alternative to the MTS report, cited three of these categories in its objections to freeways. According to the November Report, ubiquitous freeways would displace a large number of residents from their homes and neighborhoods, adversely affect the city’s budget by reducing taxable acreage, and disrupt the “beauty and
dignity” of the Nation’s Capital. Further opposition came in the 1969 Comprehensive Plan for the National Capital, which specifically avoided the addition of any new “gateway arteries” that would bring more automobile traffic into the District. Fueling the official debate over highways were citizen groups opposing segments planned to be built through their neighborhoods. Such groups included the Emergency Committee on the Transportation Crisis, which opposed a segment through northwest DC because it would destroy a large number of homes, and the Committee of 100 on the Federal City, which opposed the Three Sisters Bridge because it would increase traffic into the historic Georgetown neighborhood and be anchored in the midst of park land on both sides of the Potomac.

Portland’s equivalent to the MTS report was the 1971 Portland-Vancouver Metropolitan Area Transportation Study (PVMATS). Like the MTS report, the PVMATS was motivated by a high rate of population growth, with population in the study area expected to increase by 78% between 1960 and 1990, and even higher rates of growth in the number of cars. Another similarity was that the PVMATS also focused on designing transportation routes to serve a particular pattern of development, noting, “…it is important to determine where people live, work, shop, and play.” Unlike the MTS report, however, the PVMATS was exclusively a highway transportation plan and did not attempt to consider other modes of travel.

Opposition to freeway-dominated transportation began almost immediately following the PVMATS, with the 1972 Downtown Plan, which recognized the inability of auto-oriented tactics to achieve revitalization of downtown. In March 1973, Portland Mayor Neil Goldschmidt recommended the formation of a Governor’s task force on transportation to address the problems he saw with the PVMATS. Meanwhile, public opposition was coming to center around the construction of a particular segment, known as the Mount Hood Freeway, through southeast
Portland (Figure 3). In February 1974, a coalition of groups including neighborhoods in the planned right-of-way and environmental groups took a lawsuit to the Federal District Court of Oregon disputing the legality of the planning process. Later that year, both the Portland City Council and Multnomah County Commission passed resolutions withdrawing their support of the Mount Hood Freeway and requesting a transfer of the funds to transit projects.

A wide variety of reasons were given by various levels of government in opposing the building of freeways, and of the Mount Hood Freeway in particular. Some were similar to those raised in Washington, D.C., such as the destruction of “homes, schools, churches and neighborhoods” caused by right-of-way acquisition and increased congestion on arterial roads. Others were more particular to Portland. These were associated with the attention being given to land use planning, especially in the context of House Bill 100, passed in 1973. The Portland City Council included the Mount Hood Freeway’s anticipated effect of reinforcing trends to disperse housing and employment among its reasons for withdrawing support. Governor Straub reiterated this position in a lengthy letter to U.S. Secretary of Transportation William T. Coleman Jr. in July 1975, stating, “No longer can we allow freeways to stimulate development where it is adverse to sound land use planning.”
Governor Straub’s letter followed the release, in June 1975, of an Interim Transportation Plan for the Portland-Vancouver Metropolitan Area. This Plan was presented explicitly as a replacement for the PVMATS plan, and was based in large part on the possibility of transferring federal funds originally intended for the Mount Hood Freeway to a variety of transit projects. The transfer was officially requested in 1977 and approved in 1980.

**Goals for Transit**

In both Washington, D.C. and Portland, opposition to freeways was translated into support for mass transit alternatives. The goals set forth for mass transit were generally complementary to the reasons for opposing freeways. In Washington, the primary goal was essentially the very basic one of moving people from point A to point B. Point A was generally considered to be a suburban residential location, while point B was a downtown place of employment. Transit was intended to serve existing or projected development, and to do so economically and with a minimum amount of relocation. These goals were summarized in the criteria used for evaluating alternatives in the November Report, which included the ability to meet traffic demand, the total cost of the system, and “impact on the community.” Portland’s goals were somewhat more idealistic, and included reducing auto dependence, facilitating land use planning, and reducing air pollution.

Washington’s goal for transit was essentially pragmatic because, by the time transit was being contemplated, the problem of congestion had already become acute. The city as designed by L’Enfant in the late eighteenth century was not able to accommodate the commuter traffic of the mid-twentieth century. The November Report of 1962 described the driving factors for developing a transit plan as the combination of continued population growth in the suburbs and concentration of employment in federal government buildings downtown leading to increasingly severe congestion. The main goal, therefore, was to get suburban commuters into downtown.
The November Report touted the ability of its recommended plan to meet this goal by stating that 80% of commuters would have a station within a five-minute walk of their office. Congestion reduction was also used to campaign for a bond referendum to fund rail construction in November 1965 (Figure 4).

The focus on serving commuters was related to a broader idea that transit should be designed to serve a pattern of development that was determined by other factors. This idea is apparent in early planning documents, such as the 1961 Policies Plan for the Year 2000, which questioned the feasibility of transit, saying, “Will the new outer suburbs be so designed, and sufficiently interdependent with Metro-Center and other concentrations of activity, to justify an extensive rapid-transit system?” It continued to hold throughout the 1960s while planning for the rail transit system was underway. The description of Basic Plan Principles for the Transportation section of the 1969 Comprehensive Plan begins with the statement, “The pattern of land use determines the structure of transportation systems.”

In addition to getting government employees to their downtown offices, Washington’s business-like functional role also translated into a strong interest in economics. One of the major arguments for rail transit in the November Report was that rail’s greater capacity made it more economical than freeways. The combined rail and freeway system presented in the November
Report was estimated to cost $367 million less than the freeways of the MTS plan.\textsuperscript{37} When the adopted system was presented in 1968, it was promoted as being able to cover the cost of construction with fare revenue and projected to achieve a three-to-one benefit to cost ratio.\textsuperscript{38}

Finally, rail was able to avoid much of the relocation that made freeway construction so objectionable. The November Report estimated that relocation required for its combined freeway and rail plan would be one-sixth that required for freeways alone, and the conclusions of the 1965 Transit Development Plan noted, “Such a system involves minimal right-of-way requirements…[and] reduces the problem of displacing and relocating families and business establishments.”\textsuperscript{39}

While rail transit planning in Washington, D.C. took place in an atmosphere of crisis related to congestion, a different sort of crisis framed the planning of Portland’s light rail. The move toward light rail in Portland began in the early 1970s, during the national energy crisis, and in the atmosphere of the fledgling environmental movement. These environmental concerns were gaining expression in the state’s land use planning developments and resonated with the city’s identity as a place of natural beauty. It is not surprising, therefore, that many of the benefits described for the 1975 Interim Transportation Plan, one of the first documents to present a unified transit plan, relate to environmental and land use oriented goals. The major benefits listed are: reduced downtown rush hour traffic, reduced energy consumption, improved air quality, reduced parking demand, and “more intensive use of existing corridors,…prevent[ing] adverse environmental impacts and property loses.”\textsuperscript{40}

As indicated by the first benefit listed for the Interim Transportation Plan, reducing congestion was an important goal for transit in Portland as well as D.C. However, congestion had not yet reached crisis proportions, and this goal was often framed in more general terms of
reducing automobile dependence. The desire to move away from cars was centered on the downtown area, and began with the 1972 Downtown Plan. In its goals for transportation, the Plan included mass transit as a viable alternative to automobiles for getting to and around downtown, a pedestrian-friendly core area, promotion of bicycle use, and parking subservient to non-auto modes of travel. Because congestion was not so severe to act as a strong deterrent to driving, all aspects of transit needed to be made as attractive as possible. The 1973 Immediate Improvements Plan for the existing bus transit system was intended to increase ridership by improving service, equipment, fare structure, and marketing. This attention to all aspects of the system working together to lure people away from their cars is continued in the current Total Transit System, which includes service, information, access, waiting areas, and vehicles. In addition to paying attention to all aspects of the transit system itself, the effort to reduce auto dependence is extended to a broader set of policies centered on transit but also including development compatible with transit, mixed-use development to reduce travel needs, and improvements related to walking and biking.

The use of transit within a set of policies to reduce auto dependence is related to the goal for transit to facilitate land use planning. State-wide land use planning was adopted in Oregon with the passage of Senate Bill 100 in 1973. The bill established the Department of Land Conservation and Development and the Land Conservation Development Commission (LCDC). The LCDC was directed to establish statewide goals for land use planning. The goals that were established have had a continuing influence on transportation and transit planning, particularly Goal 12, which deals specifically with transportation.

Even before the statewide land use planning goals were established, transportation planners expressed a desire for transit to serve environmental and land use goals. The Scope of
Services statement to the contracting firm developing the Public Transportation Master Plan of 1973 includes sections on both Environmental and Land Use Goals. The first item under Environmental Goals is, “All decisions regarding a transportation system and its related impact, e.g., corridor development, land use, and growth and development pressure should be weighed against the best available ecological data for the region,” and the Land Use Goals include such items as, “The system should reinforce efforts to preserve…existing close-in residential neighborhoods” and “The system should preserve and reinforce existing rural values and agricultural uses, and protect them from undesirable urban growth.”

After the statewide land use planning goals were established, they were duly incorporated in subsequent transportation planning. The 1975 Interim Transportation Plan is focused on meeting LCDC Goal 12. This goal has continued to be the basis for transportation planning, including the various iterations of the Regional Transportation Plan, with additional environmental and land use planning policies being considered as they are developed. The 1992 Regional Transportation Plan lists LCDC Goal 12, the Clean Air Act amendments of 1990, and Regional Urban Growth Goals and Objectives among the policies considered during its development.

_Busses or Trains?_  
Having determined a need for mass transit, the two cities next needed to decide what form of transit to develop. In Washington, the decision was made quite early in the planning process, while Portland’s transit plans initially focused on busses.

Washington’s early decision to construct a rail system was motivated primarily by the existing congestion problem. Planners recognized that busses are subject to congestion delays unless designated lanes are provided, which would require either reducing the number of lanes available for car traffic or adding more lanes, neither a desirable option under the
circumstances. Busses seemed particularly impractical downtown, where the existing street pattern and character of the central area precluded any significant rearrangement. The Policies Plan for 2000 designated a subway as the only high capacity mode to have direct access to the central city because it would not interfere with surface development or circulation.

With its less severe congestion, Portland developed a series of transit plans revolving around express bus routes. The public transportation system proposed by the Columbia Region Association of Governments (CRAG) and Public Transportation Master Plan, both developed in 1973, and the 1975 Interim Transportation Plan all evaluated several possible transit modes and determined express busses to be the best option.

One early document favoring light rail was a study conducted by the Railroad Division of the Oregon Public Utility Commission. The study had been prepared at the request of the City of Portland and Multnomah County to investigate the feasibility of using existing railroads as transit corridors. The report developed at the conclusion of the study included the information requested by the governments and an unsolicited set of recommendations coming out strongly in favor of light rail. Light rail was favored based on its energy efficiency and minimal environmental impacts relative to busses and its apparent appeal to riders, based on the popularity of systems recently built in Toronto and San Francisco. The writers of the report felt that light rail was imperative to allow the city to meet its transit goals, stating, “If instead we move to build bigger and better freeways, buy more and more busses, [and] encourage further urban sprawl…, we may reach the conclusion that rail transit wasn’t really necessary after all.”

The recommendations of the Public Utility Commission were not taken immediately to heart, though the 1975 Interim Transportation Plan was a bit more rail friendly than the plans of 1973. Based on available documentation, it is not clear when the decision to build rail was
ultimately made, but by 1980 plans for the first segment of light rail were included in the Regional Transportation Plan.\textsuperscript{53}

IV. System Planning

The decision to build a rail system is, of course, only the first step in actually constructing one. The process of planning a rail system involves everything from establishing an organization to build and operate the system, determining routes, deciding where individual stations will be located, and designing the visual elements of the system. The distinctive characters of the two cities continue to be reflected in each of these aspects of system planning.

\textit{Coordinating Jurisdictions}

The rail systems in both Washington and Portland were intended to serve the entire metropolitan region, encompassing several local jurisdictions. In order for the rail system to be coherent, an organization provided with the authority to build and operate rail in all of the affected jurisdictions was needed.

The jurisdictional situation was particularly complex in the Washington metropolitan area, as it includes the District of Columbia and portions of the states of Maryland and Virginia, each with multiple counties and independent cities. To further complicate matters, the District of Columbia, long under federal control, was in the process of pursuing “home rule” during the time the rail system was being planned.\textsuperscript{54}

Attempts to coordinate transit across the various jurisdictions began as early as 1955, with the formation of the Joint Transit Commission (intended to coordinate the multitude of bus companies serving the region) and a recommendation to develop an interstate compact to deal with transportation issues.\textsuperscript{55} Such a compact was drafted, though it was initially somewhat limited in scope. The 1959 MTS plan’s recommendations for organizational structure involved the formation of a federal corporation to begin work on the transit system while a new interstate
compact with broader powers was worked out.\textsuperscript{56} Though the transportation plan proposed by the MTS was superseded, the recommendation for a new interstate compact did go forward. A new compact was finally ratified in February 1967, creating the Washington Metropolitan Area Transit Authority (WMATA).\textsuperscript{57} The new organization still needed to tread carefully to ensure the cooperation, and continued funding, of each jurisdiction. Consequently, the schedule for building the rail system included portions in all three jurisdictions at every phase Figure 5).\textsuperscript{58}

\textbf{Figure 5:} Construction phase diagrams in the Adopted Plan
The situation in Portland is less contentious, with three counties and one city all in the same state comprising the bulk of the metropolitan area. (Clark County, Washington and the city of Vancouver are often included in concepts of the metropolitan area, but have thus far not participated substantially in transit planning.) In spite of, or perhaps facilitated by, the simpler situation, the cross-jurisdictional organizations created in Portland are more wide-ranging than those created in the Washington metropolitan area.

In the late 1960s, Portland was moving toward consolidated metropolitan governance on a number of fronts. In 1967, five counties and thirty-one municipalities combined to form the Columbia Region Association of Governments (CRAG).\(^5^9\) Two years later, the Oregon Legislature created an interim committee to study cross-jurisdictional and state-local governance issues related to urban affairs and mass transit. (Interestingly, it was sponsored by the Committee on Natural Resources.)\(^6^0\) Meanwhile, the legislature also created Tri-Met, an independent government body covering the urban areas of Multnomah, Washington and Clackamas counties, originally intended to take over and revive a struggling bus system.\(^6^1\)

CRAG and Tri-Met were the major organizations responsible for transportation planning through the early 1970s. Representatives from both organizations served on the committee that developed the express bus system proposed in 1973 and on the Governor’s task force on transportation that led to the development of the 1975 Interim Transportation Plan.\(^6^2\)

In 1978 CRAG and the Metropolitan Service District (formed at the same time as Tri-Met) were combined and transformed into Metro, a governing council with jurisdiction over roughly the same area as Tri-Met.\(^6^3\) In subsequent years, planning has been closely coordinated between the two organizations, with Metro holding responsibility for land use and broad-based transportation planning and TriMet (the hyphen was eventually dropped) holding responsibility
for transit planning. Currently, TriMet’s Transit Investment Plan is coordinated with Metro’s Region 2040 Growth Concept and Regional Transportation Plan.64

Evolving Maps

The physical planning of the transit systems, in terms of locations of routes and stations and its relationship to other modes of transportation, has been quite different in the two cities. The Washington Metro has always been envisioned as a regional rail system, with a series of radial lines feeding into a set of concentrated stations downtown. After the earliest stages, it has also been planned as a distinct unit, somewhat separate from other modes of transportation, except as they serve to provide access to rail stations. In Portland, on the other hand, regional transportation planning has encompassed multiple modes, with light rail being one component of a larger transportation system. Within that framework, light rail lines in different corridors have been planned and constructed individually.

One thing the system planning processes did have in common was the consideration of existing railroads for use as rights-of-way for the new rapid transit systems. The National Capital Transportation Act of 1960 specified that a transit system should provide for “expanded use and development of existing railroad lines.”65 The 1962 November Report complied by considering two branches of the B&O, the Pennsylvania, the Richmond, Fredericksburg & Potomac, and the Washington & Old Dominion lines (Figure 6).66
Portions of most of these lines were indeed used in the plan adopted in 1968 and subsequently built.67

Always conceived of as a system, the evolution of the Washington rail system involved primarily changes in the number, placement, and length of the radial routes. There were four major iterations of the system plan: the rail elements of the 1959 MTS plan and 1962 November Report, the Transit Development Program of 1965, and finally the Adopted Plan in 1968. Though some changes were suggested through the course of construction, the plan adopted in 1968 had the power of inertia and is essentially the same as the system that was built.

The 1959 MTS considered an alternative including a rail system with nine radial lines feeding into an east-west subway spine through the central city (Figure 7).68 This option was rejected, however, because “The Washington area does not provide the concentrations of residential development or downtown employment needed to justify an extensive rail system, with its large capital costs.”69 The pattern of low-density suburban development was expected to continue, and even a full complement of radial lines was not projected to be able to appreciably reduce downtown congestion. The plan recommended by the MTS therefore included a scaled-back rail system consisting of just four radial lines forming a simple cross in the center of the city, combined with eight radial express bus routes and an extensive freeway system (Figure 8).70
Figure 7: Nine-line rail alternative considered in MTS
Figure 8: Rail, bus, and highway system recommended by MTS
In their counter-proposal to the MTS plan, the National Capital Transportation Agency’s 1962 November Report included seven radial lines (plus a commuter railroad), with a loop downtown formed by the crossing of an east-west route and the bottom of a north-south U (Figure 9). The placement of the radial lines was based on serving existing high-density corridors and minimizing costs by minimizing tunneling required for subways and taking advantage of rights-of-way along railroads or in highway medians wherever possible.

Figure 9: Rail system recommended by the November Report
In 1965 the system design was contracted to five, much shorter, radial routes, with the downtown portion collapsed to a single east-west line similar to the MTS plan (Figure 10). While the November Report included 83 miles of rail and 65 stations, the 1965 Transit Development Program included only 25 miles of rail and 29 stations.

Figure 10: Truncated system recommended by the Transit Development Program
The rationale for shortening the radial lines was that the shorter lines served areas that were already built-up and could still serve a large number of more distant suburban commuters, who were expected to drive or take busses to the terminal stations. The Program even included diagrams detailing the routes such commuters could take. Figure 11 shows the diagram for motorists, a similar diagram for bus riders was also included. The shortened system thus provided service to the most people at the least capital cost. The Program also retained the possibility of extending the lines at some future time to something resembling the plan of the November Report.

Figure 11: TDP diagram showing auto access to rail stations
Over the next three years, plans were once again expanded so that the system adopted in 1968 closely resembled the 1962 November Report plan. The Adopted Plan included 98 miles of rail and 86 stations in eight radial routes (Figure 12). The downtown portion was even more complicated than that of the November Report, consisting of the crossings of three lines through the central city (Figure 13). The Adopted Plan itself is largely silent on the reasons for the extension. Reports of a planning meeting held in July 1967 indicate that the length of the radii were chosen such that the travel time from a terminal station to downtown would be no more than approximately 45 minutes, and so that the terminal stations, expected to be large affairs surrounded by parking lots and bus loading bays for transferring commuters, could be located in less built-up areas.
Construction began, based on the Adopted Plan, in December 1969. Throughout the 1970s a series of analyses were conducted, prompted mainly by budget overruns attributed to the combination of delays and inflation. These studies suggested some modifications, and at times threatened to truncate the planned system, but ultimately the Adopted Plan held. Among the reasons for the persistence of the plan were the attachment of officials and the public to plans for segments in their areas, the difficulty of making incremental changes to a system planned as a whole, and the fact that, due to freeway plans being cancelled, there were no viable alternative means of moving people.

Within the framework of the downtown network and radial routes presented in the planning documents, there were also discussions regarding the placement of particular stations.
These discussions revolved around a variety of considerations, from the locations of downtown employment, to patterns of existing versus potential suburban development, to aesthetic considerations stipulated by the National Park Service.

Twenty-first century Washington area residents often wonder why there is no Metro station in Georgetown, a pleasant historical neighborhood and popular destination. One main reason is that the system was designed primarily to serve commuters, with central city stations located in major employment centers. Since Georgetown is primarily residential, there was little commuter traffic bound there, and therefore little perceived demand for a station. Environmental considerations also played a role in terms of the feasibility of construction. The neighborhood is on the banks of the Potomac River and local geology would have required such a deep tunnel under the river so as to make construction of a station impractical.83

Another apparently missing station is at Tysons Corner, in Fairfax county, Virginia. Tysons Corner is currently the location of a major regional shopping center and a high concentration of office buildings, apparently an ideal location for a transit station. However, while the potential development at Tysons Corner could have been anticipated, planners gave greater weight to existing residential development and potential riders in the area of the county around the town of Vienna and Fairfax City.84

Finally, aesthetic considerations related to the “beauty and dignity” of the Nation’s Capital and enforced by the National Park Service created some quirks in station construction. The lack of a station in the Adams Morgan neighborhood and exceptionally deep stations at Dupont Circle and Woodley Park are due to Park Service demands for a tunnel under rather than an originally planned bridge over Rock Creek Park.85 There are also two stations (on different
lines) on adjacent sides of Farragut Square instead of a single transfer station because the Park Service objected to placing a station entrance within the square itself.  

The system that was adopted in 1968 was eventually completed in 2001. While several ideas have been floated for extensions, there are no current plans to implement new construction. Ideas for extensions brought up in the late 1990s included the addition of lines to several “missing” stations, including Georgetown, Adams Morgan, and Tysons Corner and the Dulles Airport. There were also ideas for lines that would make more connections possible without having to go through the central city, including an east-west crosstown line and a circumferential route through the Maryland suburbs. These ideas are illustrated in Figure 14. 

![Figure 14: Potential expansions for Metrorail](image)
Such grandiose plans, however, have fallen subject to budget constraints. A report published in the late 1990s indicates that capital funding for Metrorail construction will not exist after the previously planned system is completed.\textsuperscript{89} The report enumerates a variety of potential capital improvements for transit in the region, including modifications of some structures at existing Metrorail stations, but does not contemplate any new stations.\textsuperscript{90}

Light rail planning in Portland has been much more incremental than in D.C. The Washington area system went through two distinct phases, first crafting a plan for the system, then constructing the planned system. In Portland the two phases have been interwoven, with construction on some lines going forward while plans for additional lines are still being made. Other characteristics of the Portland light rail planning process include its incorporation in broader transportation planning including other modes, a connection with the land use planning process, and significant public participation.\textsuperscript{91}

Early transit planning in Portland bore some resemblance to the Washington area model of planning a series of radial routes leading to downtown. The difference in Portland was that many of the routes were designed as express busways. Three reports produced in 1973 included possible visions of transit systems. The first of these was the Transportation Master Plan, which included a potential rail system in its analysis (Figure 15). The proposed system included elements of the light rail system that has since been constructed, such as an east-west line running from Hillsboro, through downtown, and continuing to Gresham, and an extension to the airport.\textsuperscript{92} At the time, however, the Master Plan concluded that an express bus system was the preferred option.
The express bus system concept was fully developed and presented as A Proposed Public Transportation System in August. In November, the Public Utilities Commission report analyzing the feasibility of light rail along existing railroads was completed. This report studied five corridors running along the both sides of the Willamette and extending to the east (Figure 15). It also included an appendix contemplating extending light rail to the western suburbs of Beaverton, Hillsboro, and Forest Grove, but noting that there was no existing railroad link between those locations and downtown. This early phase of planning continued with the Interim Transportation Plan of 1975, which proposed five transit corridors, including a mix of light rail and busways (Figure 16). In this plan, the east-west corridors took the form of a figure-eight centered on downtown.
Figure 16: Corridors with railroad rights-of-way analyzed by PUC
The Interim Transportation Plan indicated that a final plan would include both “expanded transit” and a “refined highway” plan, as well as elements related to freight transport, bicycles, and even aviation. With the formation of Metro in 1978, the new organization took over responsibility for this type of comprehensive transportation planning. The planning has taken the form of a series of iterations of a Regional Transportation Plan. The first draft appeared in 1980, it was adopted in 1982, updated in 1983 and again in 1989, and revised in 1992. A new version appeared in 1995, and the most recent version is currently in final draft form.

The evolution of the Regional Transportation Plan has incorporated the planning and construction of four currently completed lines and a variety of additional proposals. The completed lines are: the Eastside line to Gresham, opened in 1986; the Westside extension of the
blue line to Hillsboro, opened in 1998; the red line to Portland International Airport, opened in 2001; and the yellow line following Interstate Avenue north to the Expo Center, opened in 2004 (Figure 18). The yellow line constitutes a portion of a much-debated north-south route.

Figure 18: Schematic map of Portland light rail (MAX) system

The origins of the Eastside line are tightly connected to the cancellation of the Mount Hood Freeway. As a corridor through eastern Portland, its location is similar to that of the proposed freeway, and it is in some sense a replacement of the freeway. It was an even more directly replacement in terms of funding, as a significant portion of the federal money originally intended for the freeway was used for the Banfield Transitway Project. The Banfield Transitway included both the construction of 15.1 miles of light rail and rebuilding 4.3 miles of the Banfield Freeway (I-80). The route for the rail line appears in the Interim Transportation Plan, with the western half designated as a busway. It was the only one of the Interim Plan’s corridors recommended for initial implementation by a 1977 analysis, based on its nature as an already congested corridor. By the time the first Regional Transportation Plan was drafted in 1980, plans for development of light rail (“Fixed Guideway”) in this corridor had solidified (Figure 18).
Figure 19: Transit improvements proposed by 1980 Regional Transportation Plan

The 1980 Regional Transportation Plan included a “Regional Trunk” express bus route extending through the western suburbs of Beaverton and Hillsboro. By 1989, rapid growth in this corridor prompted citizens to request that an extension of the light rail line be completed at least as far as Hillsboro.105 The route for the new section appears in the 1992 revision of the Regional Transportation Plan (Figure 20).106 Due to concerns about performance on steep grades, the three mile tunnel through the West Hills is the only section of rail to date that is not on a surface route.107
Figure 20: Transit capital improvements proposed by the 1992 Regional Transportation Plan

Two spurs extending north from the main east-west route have been completed since 2000. The success of previously built light rail, particularly in attracting development in concert with land use plans was reflected in the building of the Airport line. Funding for this extension came entirely from a partnership between Bechtel and local governments, with Bechtel being granted development rights along certain sections of the line.\textsuperscript{108} The influence of light rail on development was also important for the most recent extension along Interstate Avenue. The route was chosen in response to residents’ desire to turn Interstate Avenue into a pedestrian-friendly area and based on the potential of light rail to catalyze the transformation.\textsuperscript{109}
The Interstate line is the only portion of a north-south route first proposed in the mid-
1990s to have been realized to date. The originally proposed route ran from Vancouver, Washington, through downtown Portland, and south to Oregon City (Figure 21). In 1995, a House Interim Task Force was formed to hear expert and public testimony on the portion of the route slated to run from downtown Portland south to Clackamas. The arguments in favor of constructing this segment are the typical goals for transit in the Portland area: facilitation of land use growth and development, improved mobility, and reduced congestion and emissions. The Task Force’s report states, “Probably the most fundamental message left with the Task Force by proponents is that light rail projects are more than transportation projects…They are also growth management tools.” Opponents, on the other hand, focused primarily on the capital cost of light rail, questioned the accuracy of ridership projections, and argued for cheaper and more flexible options. They also argued that light rail is not an appropriate means of serving decentralized

Figure 21: Proposed north-south route
employment patterns. The arguments in opposition can be seen as focusing on the people moving aspects of transit, and indicating that that aspect alone would not be sufficient to drive the investment in light rail.

The opponents’ arguments have apparently had some influence, with funding for the full north-south line being repeatedly rejected. In 1995, the three counties on the Oregon side voted to approve funding, but the project stalled because it was rejected by Clark County voters. The next year, funding was put to a state-wide vote in Oregon and rejected. By 1998, tri-county support for the project had apparently gone down, as local funding was denied. Support for the Interstate Avenue portion was revived by business and neighborhood leaders in the corridor, and they were able to gain approval for its construction in 2000. The debate over the remainder of the north-south route continues, with the extensions included in the Transit Investment Plan as of 2003 (Figure 22).

Figure 22: Proposed extensions for Portland light rail
Visual Design

The character of the two cities that influenced the decision to build rail and the location of rail lines and stations from behind the scenes finds its most explicit expression in the visual design of the system. Visual design encompasses construction of the lines, architecture of the stations, and art displayed throughout the system. In Washington, it is most apparent in the architecture of the underground stations. Portland’s visual design is somewhat more eclectic.

The 1968 Adopted Plan for the Washington system declared, “Metro will be a visual asset to the National Capital region. All elements of the system will be designed so as to enhance the appearance of the area.” For the central portion of the region, this meant placing the structure of the system underground, so as not to interfere with “Washington’s monumental, historic central area and business district.” Downtown station entrances were to be situated in visually pleasing areas such as parks and squares when possible (though the Park Service objected to such placements in some instances).

Even though they are underground, the Metrorail subway stations constitute a dominant element of the system’s visual appearance. Because the only existing subway system most people were familiar with was New York City’s, planners initially feared that a subway inevitably meant dank, unpleasant stations. To alleviate these fears, architect Harry Weese was hired to design the underground stations. In developing his design, he had to contend with the Commission of Fine Arts, whose stamp of approval was required for major architectural projects within the District. Weese’s general concept was to provide a sense of spaciousness and ease of circulation, while the Commission wanted the stations to reflect the “monumentality” of the Capital. The final vaulted and indirectly lit design managed to satisfy the desires of both the architect and the Commission (Figure 23).
Figure 23: Vaulted design of D.C. subway station

Visual appearance has been a part of transportation planning in Portland since very early on, and has generally reflected the area’s affinity for trees and other natural elements. Even the highway-dominated PVMATS plan included a section on improving the appearance of roads, with such projects as scenic entranceways, landscaped rights-of-way, and riverfront enhancement. These ideas have been carried through in the development of the light rail system, including a tree planting initiative that tripled the number of trees along the Interstate Avenue line.
TriMet has also included a budget for public art at stations in the construction of every line from the Westside line forward. The art is intended to reflect the character of the communities along the lines, and includes everything from a 300-foot long core sample and geologic timeline in the Washington Park station in the West Hills tunnel to solar powered metal tree sculptures in the Rose Quarter (Figure 24).

V. Conclusion
Over the course of conceiving, planning, and building their transit systems Washington, D.C. and Portland, Oregon have expressed their local cultures. The two cities, in two landscapes, with two identities, have built two distinctive rail transit systems. Washington, D.C., the Nation’s Capital and a monumental city, has built a monumental rail transit system that allows its residents to get on with the business of governing the nation. Portland, a city of trees and rivers, has built a rail transit system adorned with eclectic art to serve as a skeleton for planned development that will protect its natural assets.

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