THE FOREST FOR THE TREES:

A COMPARATIVE ANALYSIS OF URBAN FORESTRY REGIMES IN SEATTLE, WASHINGTON, AND PORTLAND, OREGON

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Political Science Departmental Honors Thesis

May 16, 2016

Acknowledgements

This document would not exist were it not for the assistance and support of a multitude of individuals, all of whom have provided critical advice, information, support, and encouragement along the journey to a finished thesis.

First, I must thank those who graciously consented to be interviewed and devoted not only hours and hours of their time, but advice and an astonishing degree of encouragement and interest in this project. Mr. Tom Early, Dr. Donna Kostka, and Dr. Gordon Bradley of the Seattle Urban Forestry Commission; Ms. Sandra Pinto de Bader of the Seattle City Office of Sustainability; Mr. Michael Yadrick, GSP coordinator for the Seattle Parks Department; Dr. Kathleen Wolf of the University of Washington; Ms. Meryl Radisch and Dr. Vivek Shandas of the Portland Urban Forestry Commission; Mr. Nolan Rundquist, City Arborist for the Seattle Department of Transportation; Ms. Joanna Nelson de Flores of Forterra; Dr. Karl Shepro of the University of Anchorage; Ms. Angie DiSalvo of the Portland Urban Forestry Division; and particularly former Mayor, Mr. Greg Nickels, who was gracious to respond to my tweet asking for an interview. I am keenly aware of just how valuable their time is, and endlessly grateful that so many remarkable individuals were willing to donate so much of it to this project.

Thank you to Emily Keller, Political Science and Public Policy Librarian at the University of Washington, who not only assisted me greatly with securing the source material I needed for this project but was a source of encouragement from my first steps to the last.

Thank you to Emma Rodman of the Political Science Writing Center, whom I conscripted to serve as my editor for the last month, and who provided not only crucial feedback reflected in this final draft, but much-needed reassurance throughout the process.

Thank you to my advisors: Dr. Mark Smith, whose initial feedback indisputably helped shape both the course of my project and improve its final outcome and who then trusted me to go forth and do good work; Dr. Michael McCann who provided me a solid base of understanding from which to build; and Jorge Tomasevic, whose passion for his own research and commitment to sharing that passion with his students inspired me to search for an intersection between his field and mine.

And lastly, thank you to my parents who have encouraged me, and my husband, who has done the same despite having lived with my obsessive interest in this project for the last nine months.

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Introduction

Little more than a hundred years ago, only fourteen percent of the world's population resided in an urban environment. Today, more than half of humanity makes their home in a city, a figure that is projected to rise to sixty-six percent by the midway point of the twenty-first century. With this profound trend towards urbanization comes a myriad of practical challenges concerning how to provide services, ensure health and safety, and provide a satisfying quality of life for these urban populations. Naturally, these concerns have been the subject of extensive studies and public debates as we attempt to chart the best course for our cities. Proposed solutions to these looming challenges have been tested in urban environments all across the globe over a period of many decades, with some having being widely implemented by politicians and professional managers modeling the successes of other cities. Surprisingly, after much study and experimentation, researchers have found that a large part of what makes cities safe, clean, and pleasant places to dwell may be the very thing their citizens left behind: Nature.

Research has increasingly demonstrated over the last several decades that urban forests have the capacity to address a multitude of urban problems both tangible and ephemeral. They curb the flood of stormwater that might otherwise course through our gutters and wastewater systems, saving us from floods and sewage spillage. They capture and store the carbon dioxide and particulate matter churned out by our traffic-stalled cars and trucks, scrubbing the air clean[1]. They reduce our heating and cooling costs by shielding us from the sun and wind, dampen noise, increase property values, mitigate

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[1] Hirokawa, Keith H. "Sustainability and the Urban Forest: An Ecosystem Services Perspective." *Natural Resources Journal* 51.2 (2011): 233-259. Web.

urban heat island effects, and help filter and replenish water tables that feed both streams and taps.

Less obviously, the presence of trees has been shown to increase community engagement, promote a

sense of well-being[2], and reduce crime rates[3]. There is even demonstrable evidence that people shop

more in well-forested urban districts, generating tangible revenues for both local business and the cities

that tax them[4]. Urban trees are, it would seem, astonishingly versatile pieces of urban infrastructure

that pay dividends far beyond their cost, and as Angie DiSalvo of the Portland Department of Urban

Forestry describes them, "Trees are not a nicety, they're a necessity." Why, then, is it sometimes so hard

for cities to maintain their urban forests? How do the structures of city governments influence the

means by which they attempt to preserve and enhance their urban forests, and how do those means

impact the overall efficacy of their efforts?

This paper seeks to explore these questions through the study of two specific examples: The

cities of Seattle, Washington, and Portland, Oregon, whose many similarities, and distinct divergences

provide an ideal natural experiment from which to glean insights. In undertaking this study, I examined

both the relevant legislation produced by each city, which establishes agencies and municipal code

governing trees and natural spaces within cities, as well as reports and other documents created by each

city that assess the state of their urban forests at particular periods of time and the progress they have

achieved. Additionally, I conducted over a dozen lengthy interviews with city officials, past and present,

as well as others who have played critical roles in the development and administration of urban forestry

policy in both cities. I gathered both their recollections of the manner in which these programs

developed in addition to their insights and opinions about the strengths and weaknesses of the

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[2] Dwyer, John F., et al. "Assessing the benefits and costs of the urban forest." Journal of Arboriculture 18 (1992): 227-227.
[3] Troy, A., J. O'Neil-Dunne, and Morgan Grove. "The Relationship between Tree Canopy and Crime Rates across an Urban-rural Gradient in the Greater Baltimore Region." *Landscape and Urban Planning* 106.3 (2012): 262-70. Web.

[4] Wolf, Kathleen. *Trees on Main Street: Influences on Retail and Shopping Behavior*. Rep. N.p.: U of Washington, 2004. Print.

approaches the two cities have pursued and challenges and complexities posed by the underlying problems. Lastly, having assembled a picture of the evolution of both cities' urban forestry regimes, I attempt to put these two cases in conversation with prevailing political theory governing the specific issues that have emerged as central to my case studies. Though the two cities are a naturally occurring experiment which exists outside the boundaries of strict scientific controls, their many similarities, and their few key, but significant, differences, combined with each city's data, a substantial body of qualitative testimony and the broad context of prevailing theory afford the two cases a marked degree of internal validity.

I first look at a history of land use policy in Washington and Oregon, both as a frame to understand what each city was capable of doing within the legal framework of state law and as a direct parallel that reflects and informs each city's unique approach towards urban forestry. Next, I examine the advancement of each city's urban forestry regime and how it has developed. In the subsequent section, I compare the results garnered by both programs and examine three major factors which have been instrumental in their development. I will explore the question of how and when urban forestry is taken up by municipal government as an issue and impediments to urban forestry gaining traction as an important local issue. I will then go on to consider the structural elements of both cities' governments and their urban forestry programs, and discuss the impacts these structures have had in how urban forestry policy developed and was implemented in each case. Last, I will discuss the question of institutionalization of urban forestry policies and priorities in both cities throughout different strata of local government, at what point city governments begin to internalize the importance of protecting and expanding urban forestry as a norm, and what challenges exist to instilling that level of policy buy-in amongst city leaders and agencies. Sustainable development is, in its broadest sense, a question of

normative values[5] and, through these case studies, the hope is that we will gain valuable insight into the factors that breed successes, challenges, complications and failures with respect to attempts to protect and expand a city's urban forest. Ultimately the conclusions that I arrive at are much more complicated than I had originally anticipated, and indicate that Portland's more centralized, insulated approach, combined with a lengthier pursuit of urban canopy cover, has resulted in a program that is more effective overall, while Seattle's more cooperative, diffuse model has bred less conflict but at the cost of overall efficacy. However, to fully understand the reasons behind why this is the case and the path each city has taken, both broad and state specific historical context proves an illustrative base to build upon.

The Origins of Urban Forestry

Ever since Lewis and Clark's famed westward expedition, the Pacific Northwest has been as renowned in the American consciousness for its vast, lush, verdant forests as it is for its abundant precipitation. Both Portland, Oregon, and Seattle, Washington, have monikers and histories inextricably bound up in their forests, both as symbols and within the very foundations of their nascent economies. Both began their lives as logging towns in an era that long predates ideas like land-use policy or environmental preservation, in a time when America believed the West was a vast frontier of limitless resources waiting to be harvested by the hardy and intrepid. The only limits imposed on the early timber barons of the Pacific Northwest were those of property ownership, and while Seattle's 'Emerald City'

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[5] Kraft, Michael. "Ecology and Political Theory: Broadening the Scope of Environmental Politics -- Environmentalism and the Future of Progressive Politics by Robert C. Paehlke / Rational Ecology: Environment and Political Economy by John S. Dryzek / and Others." *Policy Studies Journal* 20.4 (1992): 712. Web.

nickname conjures up images of expansive greenery, Portland's less romanticized 'Stumptown' paints

what is, perhaps, a more accurate picture of the era. By the late nineteenth century, neither city bore

much resemblance to the majestic forests they were carved from. The evergreen trees that had been

clear cut in the mid-1800s were the products of ages of nature's work - late-stage forests that had been

through the natural process of environmental succession which sees quickly establishing deciduous

trees like maples eventually replaced by the slower-growing but more dominant evergreen trees the

Pacific Northwest is known for. This process, which can take as much as a century and a half to occur

naturally, was quite obviously incompatible with the unfettered logging practices of that era and the

relentless pressures of cities growing annually by leaps and bounds.

Like forests, cities also generally follow natural stages of development. By the close of the

nineteenth century, both Seattle and Portland were well established enough to begin to cast off their

anything-goes heritage and turn an eye to the aesthetics and quality of life of their urban environments,

keeping with the 'City Beautiful' movement that swept the nation during this period. The ideals of 'City

Beautiful' championed the inclusion of ample green spaces within cities, both as a means of adding

beauty to urban environments, and for the benefit of citizen's physical and moral well-being. These early

20th century sociologists theorized that intensified competition for land in urban environments drives

people to organize urban space into parks as a respite from urban life[6], an observation that has proved

prescient in light of research just undertaken in the last decade, which shows mental and social benefits

accruing from the inclusion of the natural within a city. The turn-of-the-last-century municipal

governments of Seattle and Portland, both out of a desire to bring a sense of harmony with their greater

natural surroundings, to improve the quality of life for its residents, and to distance themselves from

their frontier town origins and lay claim to the mantle of a genuine metropolis, began to consider broad-

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[6] Alberti, M. *Advances in Urban Ecology: Integrating Humans and Ecological Processes in Urban Ecosystems*. New York: Springer, 2008. Print.

scale urban planning issues, particularly with respect to the establishment and preservation of parkland within their city limits.

In 1903, the Seattle City Council hired the Olmstead Brother's Landscape Architecture firm, who famously established New York City's Central Park, to design a network of parks and green spaces across the city, connected by green boulevards. Their work has endured in Seattle, and today, Olmstead legacy parks include Seward, Green Lake, Woodland, Washington, and Jefferson Parks. Portland retained the services of the Olmstead Brothers that same year to similar effect, likewise implementing a city-wide plan for parks and green boulevards that endure to this day. Moreover, while it is easy to take the idea of city parks for granted today, a 1925 work discusses how most of the 'manmade' green spaces in cities were no more than 50 years old, and municipal governments were still, at that time, coming to an understanding of the benefits and commitments involved in incorporating natural elements into urban design. These efforts were further bolstered by the work of President Roosevelt's Civilian Conservation Corps in the 1930s, who planted trees in urban environments in addition to their work in other parks and national forests.

At this period in municipal development, however, a city's interest interspersing nature into an urban environment was mostly confined to parks and public lands. Land-use policy and the idea that government could impose regulations upon the privately-owned land was only just being tested when the United States Supreme Court upheld the rights of government to regulate how privately held land was used and developed through *Village of Euclid v. Ambler Realty Co.* in 1926. It would not be until the 1970s, after the establishment of a national highway system and the realities of post-World War II suburban sprawl had become a widespread concern that, in conjunction with a growing nascent national environmental awareness, government began to more broadly exercise its ability to impose land use restrictions on privately held land in an attempt to curb urban sprawl and growing environmental degradation in and around cities. In many ways, the national consciousness began to look back to the

ideals of the 'City Beautiful' movement, which had previously seemed a solution to all humanity's ills, as an answer to modernity's shortfalls, anticipating an environmental awareness that would steadily gain traction in political conversation over succeeding decades.

The Emergence of Urban Forestry

The earliest documented reference to 'Urban Forestry' as a discipline appears to date to the work of Gene Grey and Frederick Deneke at the University of Toronto in the mid-1960s. Later in the decade, in a report submitted to the President of the United States in 1968 by the Citizens Advisory Committee on Recreation and Natural Beauty, the term appears in the context of encouraging research into city trees and assistance with their establishment through federal grants. As a discipline, however, it was not until the late 1970s and early 1980s that it began to establish itself as a distinct branch of the study of ecology. Prior to this, very little scientific research had been devoted specifically to the function of trees and vegetation in urban environments and the challenges they confront by virtue of their surroundings. Soon after its inception, however, urban forestry had gained national traction as both an issue of broad interest and an area of study with unique challenges and benefits. Through the work of researchers and advocacy organizations like the Arbor Day Foundation, American Forests, and the National Urban Forestry Council, the heightened awareness of the benefits and importance of urban forestry as a crucial part of municipal management gained a place on the national agenda. In 1990, the Urban and Community Forestry Program was passed as part of the Farm Bill, providing a pool of both expertise and much-needed funding for urban forestry programs across the country from which to draw. Over the next decade, a number of advancements were made in the field of urban forestry, including software commissioned by the United States Forestry Service that used satellites to map and quantify

urban green spaces. This offered cities a helpful baseline evaluative standard that they could use to study the state of their urban forests as a prelude to comprehensive planning. As new tools and information became available, national agencies and organizations began to highlight the need to consistently manage a city's trees. City trees, subjected to stress and challenges that their rural counterparts are not, require more active management to remain healthy and productive. While natural forests undergo cycles of succession which alter their composition over time as one species flourishes and fades before being replaced by a later one, these types of processes are not suited to urban forests which have to be maintained with the needs of their human populations in mind. In the wake of the millennium, many conferences were convened to share information and heighten awareness of the issue among both city governments and potential advocates, like arborists, urban planners, and various nonprofit organizations. By this juncture in the development of Urban Forestry as a discipline, the work of environmental scientists, landscape architects, municipal planners, and engineers had produced a wealth of scientific research demonstrating that the benefits of urban forests far exceeded their aesthetic value.

Urban Forests at Work

"Trees still sell because they're pretty," opined Seattle City Arborist Noland Rundquist, as we discussed the benefits of urban forests as infrastructure and the challenges of conveying their role as multitasking pieces of green infrastructure to citizens who have never looked beyond them as a source of leaves to rake. "And that's the hard cold fact. People don't want a tree out in front of their house because they think it's going to sequester carbon, or it's going to intercept rainwater, or it's going to grab particulate matter. They want it because it's going to be nice out there. It's going to be pretty."

The aesthetic value of a tree may be the most obvious thing it brings to the urban table, but in truth, trees are urban workhorses that deliver a broad array of tangible services for a very modest price tag.

The presence of large ratios of impervious surfaces in cities can result in the depletion of streams and aquifers as water is prevented from being absorbed into the ground, channeled instead into waste water systems that can quickly become overtaxed during severe weather events. The presence of urban forests in cities can significantly mitigate this and many studies have demonstrated that the presence of a well-designed and maintained urban forest not only greatly improves storm water drainage, capturing a significant portion of water before it enters drainage systems, and slowing the flow of the remainder as it is filtered through leaves and roots to reduce urban flooding and waste overflows resulting from overloaded sewers, but also serves to filter pollution and particulate matter out of storm water runoff. At the same time, urban trees have the capacity to mitigate urban air pollution significantly, capturing anthropogenic CO_2 as well as other pollutants and helping cities meet federally mandated air quality standards. The litany of benefits extends further, with additional research demonstrating that the presence of urban forests can mitigate heating and cooling costs by dampening the heat island effect that most cities experience, and increasing property values in well-forested areas. More recent research has indicated that the benefits of urban forests also extend to less visible societal values, such as an increase in retail sales in communities with significant urban forestry presence, a reduction in stress levels and increase in perceived quality of life among citizens, and even a reduction in crime rate that has been attributed to an increase in community involvement in forested neighborhoods. Urban forests and the presence of urban trees have sometimes been viewed skeptically in terms of safety, yet the presence of moderate urban canopy cover has been associated with as much as a 40% reduction in crime rates. Some studies have documented a correlation between the presence of significant number of trees, reduction of feelings of aggression, and an increased sense of community

inclusion[7]. Taken in total, the benefits of urban forestry are potent and far-reaching, impacting the day to day operations of a city on a fundamental level.

Urban Forestry in Portland

Legislative Foundation

Both Oregon in general, and Portland in specific, committed themselves to a sustained regime of government regulation over both development and environmental conservation very early on in comparison to national trends. Indeed, Portland is often cited as the quintessential example of progressive land planning policy in the United States. Their use of regulation and policy to address how land is used begins in the late 1960s with the introduction of a state-level planning policy that set forth standards for work that had previously only been undertaken at the municipal level, if at all. This put the state of Oregon at the forefront of a broad trend toward state-level coordination of development that gradually became the norm across the nation. Considered to be the most rigorous of the contiguous 48 states by many informed analysts[8], Oregon's watershed 1973 Land Use Act, also known as SB 100, was born out of a grassroots groundswell of support for the implementation of more stringent land-use

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[7] Hirokawa, Keith H. "Sustainability and the Urban Forest: An Ecosystem Services Perspective." *Natural Resources Journal* 51.2 (2011): 233-259. Web.

[8] Nelson, A. C., & Moore, T. (1996). Assessing growth management policy implementation: Case study of the united states' leading growth management state. *Land use Policy, 13*, 241-259. Retrieved from http://search.proquest.com.offcampus.lib.washington.edu/docview/59737528?accountid=14784

policies which led to the creation of the Oregon State Department of Land Conservation and

Development. Even with this broad-based conservationist support bolstering state government efforts,

opposition to restrictions on private property rights was vocal, and the process of developing and

implementing this policy was difficult. What helped sell this policy to the citizens of the state of Oregon

and cement its passage was that SB 100 was structured as a bottom-up policy that, while it mandated

the use of land use plans, tasked local governments with the formation of those plans which are then

reviewed by the State Department of Land Conservation and Development to ensure they comply with

over-arching State standards. This centering of development activity at the local level allowed

municipalities to tailor its implementation to their needs within the framework of the Land Use Act,

which, in turn, helped made the bill more palatable to more rural, inland counties and constituencies in

Oregon that might otherwise have more vigorously opposed the measure as government overreach.

From the perspective of urban forestry, what SB 100 emphasized was the need for conservation

of forested land within each county and municipality, and the need to arrange the use of urban space

with the needs of the city in mind rather than simply spreading outward. It is through this lens that

Portland began its local conservation work in the 1970s, which ultimately became the Urban Forestry

Department of the City of Portland. Though there is evidence to suggest that these land use plans have

not been as effective in less urbanized population centers in Oregon[9], Oregon's package of land use

regulation, including the watershed SB100, have been very effective at preserving green space and

curbing urban sprawl in the comparatively dense tri-county greater Portland metropolitan area, where

over ninety-five percent of development has been constrained within urban growth boundaries set forth

by growth management plans.

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[9] Nelson, A. C., & Moore, T. (1996). Assessing growth management policy implementation: Case study of the united states' leading growth management state. Land use Policy, 13, 241-259. Retrieved from http://search.proquest.com.offcampus.lib.washington.edu/docview/59737528?accountid=14784

In some ways, it is Oregon's successes that now have begun to generate problems at both the state and municipal level. Forty years' experience with arguably the most progressive and comprehensive land-use policy regime in the country and a broad base of public support, particularly in the Portland metro area, has created communities and groups that seem to feel persecuted and alienated from these governmental processes. Consequently, over the course of time, a variety of exceptions and clarifications have been added to the law by state legislatures under pressures from constituents unhappy with the imposition of development restrictions on their privately held lands[10]. These myriad small exceptions have served to weaken land use regulations over time, while there are still interests who would like to see them abolished as unconstitutional and withdrawn entirely. The small incorporated municipality of Damascus, which lies within the Portland Metropolitan region, has considered unincorporation as a means to wriggle free of some of the restrictions imposed on it that would require increased density and services in areas designated as urban.

This angst over the sanctity of property rights versus the duty of the state to provide a healthy and livable environment has been played out through ballot measures in Oregon over the last two decades. After two failed attempts to curtail or offset the ability of the Oregon Legislature to impose land use regulation through ballot measures, first with Ballot Measure 65 in 1998 and then with Ballot Measure 2 in 2000, Ballot Measure 7 finally passed that same year with just 53% of the vote. This measure amended the Oregon State Constitution to require that the State reimburse landowners when the imposition of regulations reduced the value of their property. This initiative was subsequently overturned by the State Supreme Court in 2002, but two years later, in 2004, Ballot Measure 37 passed with 61% support. Measure 37 was very similar to the original measure 7, but did not seek to amend the state constitution, and allowed the state to opt to waive the imposition of regulation instead of paying compensation. It also applied retroactively, and allowed property owners to seek compensation or relief

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[10] Daniels, K. H., A.I.C.P., & Sullivan, E. J. (2013). Oregon's 40-year-old innovation. Planning, 79(2), 14-21.

not only from new land use regulations, but any that had been imposed since they originally purchased

their property. This gave rise to over seven thousand claims under Measure 37[11]. Then, in 2007, yet

another Oregon Ballot measure concerning land use was put to voters and passed, this time seeking to

repeal much of what had been enacted by Measure 37. Measure 49 required a much more stringent

level of proof of damages than its predecessor, and went on to limit both the type and scope of

regulations that could be waived under claims for relief from land use regulations. What can be broadly

inferred from this sequence of ballot measures is that, while there is general support for land use

legislation in Oregon, particularly in the Portland Metro Area, there is also a significant voice of

opposition that feels that government imposition of restrictions on the use and development of

privately held property is a violation of their fundamental property rights. These same tensions between

broad public good and individual potential monetary gain motivated the passage of this succession of

state bills and constraints on the development of farmland outside the city into suburban tract housing

and underlie issues of urban forestry within the City of Portland. While its stringent protections on large

and historic trees and steep remediation assessments for tree removal during development have

constrained many attempts to redevelop property in Portland, these policies have also provoked

outcries of frustration from a small subset of property owners and many developers. Thus far, they

remain a vocal minority, but in light of the state-wide trend of citizen initiative backlash aimed at land

use policy, the presence of an interest group with a focused interest in weakening urban forestry

legislation remains an important consideration to bear in mind and a possible future challenge with

which to contend.

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[11] Mortenson, Eric. "9 Started with Measure 37, Oregon Land-use War Settled with a Muted Impact on the Land."
The Oregoneon [Portland] 1 Feb. 2011: n. pag. Print.

State of the Forest

Undaunted by detractors, the majority of Portland's citizens and its government have embraced

this conservation and planning agenda to a remarkable level. Despite being Oregon's largest

metropolitan area and under mounting pressure to increase the supply of available housing to

accommodate a steadily growing population, it has been one of the first cities to implement

comprehensive urban planning regimes and to employ innovative solutions like regional governance

models that extend planning beyond city limits,incorporating country and municipal governments in

working towards a coordinated end goal. Though the term 'urban forestry' did not enter the common

lexicon until the 1980s, Portland's institutional management of its city trees has been equally

progressive, and dates back to the early 1970s when the city undertook legislation to preserve open

space within city limits and restrict the impact of automobiles. The Portland Parks Department, which

dates back to the first decades of the twentieth century, oversaw tree maintenance within city limits for

the better part of the twentieth century. Then in 1972, the Portland City Council instituted

comprehensive legislation governing the care and preservation of its urban trees, investing the Parks

Department with responsibility for all city-owned trees, which include those planted in right-of-ways.

Further, it established the 'Street Tree Division' and the position of City Forester within Portland City

Government. This same package of legislation instituted procedures requiring private landowners to

secure permits for the planting and, most importantly, removal of trees within city limits, even those on

private property. A few years later, in 1975, the Portland City Council established a committee of

concerned citizens to study and advise the council specifically on issues and legislation relating to street

trees in Portland. At the same time, they received a Federal grant which allowed them to plant an

additional twenty thousand urban trees. This package of urban forestry programs allowed Portland to

satisfy all of the requirements set forth for the Arbor Day Foundation's new 'Tree City USA' designation, and, in 1977, Portland was the first city awarded this title.

By 1987, unfocused interest in trees and the incorporation of nature in urban environments had coalesced into a more focused and scientifically grounded discipline under the banner of 'Urban Forestry'. Portland, having both an ample amount of trees and green space within its city limits and more than a decade of experience institutionalizing management and legislation relating to the protection and nurturing of trees within its borders was uniquely positioned to incorporate the emerging scientific study of urban trees into its existing management plans. The Street Tree Advisory Committee was reconceptualized as the Urban Forestry Commission, with new requirements ensuring that at least one member would be a certified arborist. Under this new banner, its mission was expanded to include assisting with the development of a comprehensive urban forestry plan and making annual reports to the Parks Bureau. Currently, the Urban Forestry Commission is required to include at least three members with experience in the fields of arboriculture, landscape architecture, or urban forestry; one that sits on the board of a concerned non-profit organization and seven others who will "represent diverse geographic areas, interest and expertise of the community". All of Portland's Urban Forestry Commissioners are appointed by the Mayor's Office. The first Urban Forestry Plan was developed and submitted to the Portland City Council in 1995, which emphasized the need to incorporate urban forestry planning into broader neighborhood plans, and focus on education and community outreach to help the citizens of Portland appreciate and understand the many benefits of urban forestry. To that end, the plan established Portland's Tree Liaison program, whose aim was to train neighborhood advocates to serve as ready sources of expertise in service of the program's goals. Tree liaisons would help disseminate information to their neighbors, both on a broad scale about the general goals of urban forestry in the city, as well as more practical, day-to-day issues like proper planting and pruning techniques.

Portland boasts a robust and well-maintained urban forest, with an overall urban forest canopy cover of somewhere between 26 and 30 percent as mapped by Urban Tree Canopy tool developed by the US Forest Service. This is due in no small part to the sustained conservation and development efforts of city staff and politicians. After sustaining extensive losses to Dutch elm disease, the city has pursued a campaign of general species diversity, and now estimates that its urban forest is comprised of approximately 171 different types of trees, though over half of those are deciduous broadleaf cultivars[12], mainly made up of varieties of maples, which offer less potent storm water mitigation benefits in comparison to evergreens as they are dormant and leafless during months where precipitation is likely to be at its highest. Across all species represented, over half of Portland's urban forest is comprised of trees six inches in diameter or less, suggesting that many of its trees are young and have yet to fully establish themselves. Only ten percent of its urban forest is composed of trees larger than thirty inches, suggesting that large varieties and older trees are under-represented. In response to this under-representation of large and mature trees, their urban forestry commission, in concert with the Urban Forestry Department, lobbied the city council to have the mitigation fees for removal of large trees during development projects increased. They were successful in their efforts, resulting in a significant increase in mitigation fees for removal of large trees and a requirement that demands forty-five days of posted notice[13]. In light of the current housing shortage and rising cost of housing in Portland, this alteration and the broad-based support it received from the city council serves as a powerful attestation about the city's commitment to urban forestry. It should also have a significant impact, as mapping estimates suggest that greater than half of Portland's urban forest is situated on private, rather than city-owned, land.

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[12] 2007 Urban Forest Canopy Report. Rep. N.p.: City of Portland, 2007. Print.
[13] Cairo, Jenn. "Update on T11 Amendment and FY 16-17 Budget Process." 4 Mar. 2016. E-mail.].

Urban Forestry in Seattle

Legislative Foundation

While Oregon was one of the first states in the nation to adopt statewide land-use policy, Washington was slower to act, becoming one of the 'second wave' states in the 1980s to institute comprehensive zoning policy in a more nuanced form. Despite implantation of the Shoreline Management Act in the early 1970s, Washington State had very shallow land-use regulations before the adoption of the Growth Management Act (GMA), which finally passed in 1990. The GMA is differentiated from Portland's first wave SB 100 by employing a more balanced approach that concerns itself both with environmental stewardship and coordinated planning to maximize economic interests. Frequently characterized as a 'bottom up' approach, it does not mandate land-use planning across all counties and municipalities, as Oregon's SB 100 does, but rather requires that cities and counties implement "critical area ordinances". When triggered by a certain growth percentage within a one-year timeframe, these critical area ordinances serve to channel urbanization into pre-designated areas through the use of the "urban growth area". This effectively exempts more slow-growing rural counties in the south and east of Washington from forced participation. When local growth does surpass the trigger threshold it is undertaken at the local level, which allows municipalities to tailor it to the particular needs of their community within the context of overall state guidelines in much the same way the Oregon legislation does. These state-level land-use policies provide interesting mirrors for the development of each city's urban forestry regime, and in many ways parallel the approach taken by each city. As Washington State was later than Oregon in implementing land use regulation, so was

Seattle markedly slower than Portland to address issues related to urban forestry on a city-wide level. Its program pursues maintenance of its urban trees on an ad-hoc basis within the city, depending mainly on where they happened to be situated, prioritizing cooperative structures over more rigid ones that emphasize outcomes over relationships.

State of the Forest

At the close of the twentieth century, the American Forests Foundation produced a report in advance of a conference held in Seattle in 2000. This report, which was heavily covered by the media and resulted in widespread public concern, analyzed the state of Seattle's urban forest and found that its had lost nearly half its heavy tree cover between 1972 and 1996 and 67% of its medium cover during that same period, resulting in over a million dollars annually in increased stormwater mitigation costs and a quarter of a million dollars in air pollution-related expenses that would not otherwise have been incurred had its urban forest remained intact. The 1999 AFF report made plain that, as a result of development and the prevalence of invasive species, Seattle's urban forest was on a path to becoming ecologically dead within the next quarter century unless they adopted a more active management strategy. During roughly this same period, forested land in the Puget Sound region decreased by 5% from 1991 to 1999, while highly developed land with greater than 75% impervious surfaces increased 6%. In the urban growth boundary, forest declined by 11.1%, with almost half the land conversion to development occurring in the Seattle metropolitan areas[14]. The availability of both data and scientific expertise through the intervention of the American Forests Foundation and the ensuing media attention

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[14] Alberti, M. Advances in Urban Ecology: Integrating Humans and Ecological Processes in Urban Ecosystems. New York: Springer, 2008. Print.

and public outcry created a coalescing of conditions that made it very likely Seattle would turn its attention towards urban forestry as a city concern.

When former Mayor Greg Nickels was elected to office in 2002, urban forest stewardship in Seattle had yet to be adequately addressed by city government. Nickels, active in Seattle area politics for the entirety of his career, came to office with the intention of undertaking a package of environmental legislation, particularly in the wake of the United States' failure to ratify the Kyoto Protocol emissions restrictions developed under the United Nations Framework on Climate Change. With its broadly homogenous, progressive population dynamic in the midst of an economic and developmental boom, Seattle as a city was well-positioned to be a receptive audience to an environmentally framed agenda. Nickels began laying groundwork within his administration which would allow Seattle to make a contribution towards the problem of climate change independent of the more divisive state and federal legislatures which had been unable to come to consensus on how to address the issue. "We had a couple of things that we were trying to achieve," Former Mayor Nickels said during our interview. "One, we were trying to meet the goals of the Kyoto Treaty, and I led a national effort on that. And because so many mayors signed on I knew that I had to follow through. And so I put together what we called the 'Green Ribbon Task Force' to get together a plan for how we achieve that 8% reduction in emissions by 2012. And that plan included lots of different things – Transportation items, buildings, but also urban forests and increasing the number of trees, the canopy cover in the city, in order to capture carbon and offset urban heat island effect." One of those steps would turn out to be the Green Seattle Partnership, a cooperative arrangement between the City of Seattle and the then Cascade Land Trust, now Forterra. Forterra, then known as Cascade Land Conservancy, had had been working in the greater King County area to purchase parcels of forested land to protect them from future development and either manage them internally or transfer ownership to local municipalities under the protective auspices of stewardship agreements. "We couldn't do it. We knew our forests were filled with invasive species, we

did a survey of that… What we discovered was in the 3,500 acres of city-owned urban forest, 2/3rds to

3/4s were filled with English Ivy, Himalayan blackberries, and other invasives and they were killing the

urban forest. And, in addition to capturing carbon and mitigating the urban heat island effect, there was

also a great benefit to be had in stormwater, and that was something I knew from the county because

we saw as suburban sprawl continued into the mountains how much more flooding they were having…

We knew the Parks Department didn't have the resources to do it. They were restoring a couple of acres

a year, up to ten, and we needed to do an order of magnitude more than that. So that was where the

partnership came in."

Building on an existing relationship that dated back to Nickels' time in county government,

where he helped start the Cascade Land Conservancy with a $15,000 earmark in the county budget, and

a past professional relationship with CLC's then-director that harkened back to their work together on a

1989 bond measure, Nickels suggested that Cascade Land Conservancy refocus its work on the

conservation and restoration of city parklands. Under the auspices of a Memorandum of Understanding

authorized by the Seattle City Council in 2004, the City of Seattle and Forterra agreed to develop a plan

for the restoration of 2,500 of the 3,700 acres of land managed by the parks department by 2025.

Forterra agreed to provide an initial investment of three million dollars of private money as well as the

60,000 hours of volunteer time it generates on average every year in consideration for agreements by

the city council that they would provide annual funding for the project for its twenty-year duration.

Initial estimates suggested that restoration of the full 2,500 acres would cost 52 million dollars over the

20-year period, with an average cost of $20,000 per acre restored[15]. This partnership model allowed

Forterra to enlist other charitable partners, which now includes dozens of different private and

charitable organizations, like the Audubon Society, and others who focus on community, youth or

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[15] "20 Year Strategic Plan - Green Seattle Partnership." Green Seattle Partnership. N.p., n.d. Web. 07 May 2016.
<http://greenseattle.org/about-us/20-year-strategic-plan/>

artistic outreach to the community, but have incorporated nature and stewardship into their mission

focus. Seattle Parks and Recreation, the Seattle Office of Sustainability and Environment, and Seattle

Public Utilities all participate in the administration of the Green Seattle Partnership, along with

representation from the involved charities which, thus far, has always included Forterra as the initial

lead partner in the project, and is governed by a nine-person Executive Council appointed by the

Mayor's office.

This piece in place, and the U.S. Conference of Mayors Climate Protection Agreement formally

enacted by Mayor Nickels and 141 other mayors in 2005 in answer to the Kyoto agreement, Seattle

began to address the broader picture of urban forestry within the city. While the work of the Green

Seattle Partnership was crucial to restoring park-owned properties, those properties represent just a

small fraction of land within city limits as a whole and an even smaller percentage of the overall tree

canopy cover within Seattle, much of which exists on privately held land. The City of Seattle has

commissioned canopy cover assessments with the goal of measuring overall canopy cover in the city,

first in 2007, and then again in 2009, in addition to the one undertaken by the American Forests

Foundation in 2000. Best estimates place the current City of Seattle canopy cover at 23 percent[16], with a

total number of trees in Seattle at between 1.6 and 3 million. Early successional species like alder and

big leaf maples, many of which are near the end of their life cycles, accounted for as much as 70-80

percent of Seattle's canopy cover in 2007. Later in 2007, the City of Seattle adopted the Urban Forest

Management Plan which set forth a 30-year strategy and statement of priorities that seeks to increase

the canopy cover of Seattle's urban forest to thirty percent by 2037, as well as establishing a

cooperative framework for the nine different departments in city government with a stake in the issue

of urban forestry in Seattle. This interdepartmental team replaced a more informal and pared down

version that had existed since 2000, though Seattle's reforms have not yet extended to enacting truly

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[16] 2013 Urban Forest Stewardship Plan: Executive Summary. Rep. N.p.: City of Seattle, 2013. Print.

comprehensive tree code legislation. Despite several drafts having been considered by the Department

of Planning and Development, there has been little evidence of support for a comprehensive tree code

that might impose additional constraints on development by the City Council. The revised 2013 Urban

Forestry Plan lists four primary goals: Creating an ethic of stewardship for the urban forest among City

staff, community organizations, businesses, and residents[17]; Striving to replace and enhance specific

urban forest functions and benefits when trees are lost; achieve a net increase in the urban forest

functions and related environmental, economic and social benefits; Expanding canopy cover to 30

percent by 2037; and bolstering the health of the urban forest to remove invasive species with an eye to

increasing overall longevity and improving species diversity. It prioritizes the preservation of existing

trees, particularly evergreens, establishes mid-to-large size trees and stands of trees over single, isolated

trees, restoration, educational outreach, and reforestation/replanting. As foreshadowed by the

American Forests report of 1999, the 2013 report found that as much as 70 percent of Seattle's urban

forest are threatened by the encroachment of invasive species[18]. Seattle's overall plan also makes it a

goal to approximate, as much as is possible in an urban setting, the sort of broad species composition

that one would find across the spectrum of Pacific Northwest forests. Virgin Northwestern forests are

composed of primarily evergreen trees with a small smattering of deciduous trees; however, Seattle's

urban forest is comprised of only 31 percent evergreen trees, which is of particular concern as these are

the types of trees which offer the most concentrated benefits on stormwater mitigation. City

assessments also recognize that many of the trees planted in the wake of the initial drive towards the

restoration of clear-cut trees felled at the beginning of the twentieth century are now reaching the end

of their natural life cycles and will need to be replaced[19]. In an effort to increase the depth of available

information and expertise,, the city passed Ordinance 123052 in 2009 which established Seattle's Urban

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[17] 2013 Urban Forest Stewardship Plan: Executive Summary. Rep. N.p.: City of Seattle, 2013. Print.
[18] ibid
[19] ibid

Forestry Commission, a currently 10-member council of volunteers with various specialized backgrounds who have been appointed by either the mayor or city council and confirmed by the city council on issues concerning urban forestry.

Comparisons of Effectiveness

At first glance, Seattle and Portland seem quite similar, both cities situated in the verdant landscape of the Pacific Northwest, both being the dominant population centers in their respective states with many historical commonalities, and both comprised of comparable homogenous population demographics with similar political norms and values. Among major cities, Seattle and Portland both boast overall favorable carbon footprint rankings, with Portland claiming the third most sustainable carbon footprint and Seattle the sixth, and with both classed as 'high performing metropolitan regions' with respect to aggregate prosperity[20]. In studies of overall development and well-being, there is a strong linkage between the presence of quality places and overall prosperity, as healthy and attractive environments tend to attract human capital to a city. This, in turn, makes it a desirable site for corporate economic development, and both cities have enjoyed better than average prosperity in the second decade of the 21st century and corresponding increases in population and demand for housing. However, with respect to the issue of urban forestry, any sort of sustained scrutiny reveals both profound and fundamental differences in approach and, ultimately, in outcomes that makes the analysis of their differences a natural experiment which may offer beneficial insights that can broadly inform
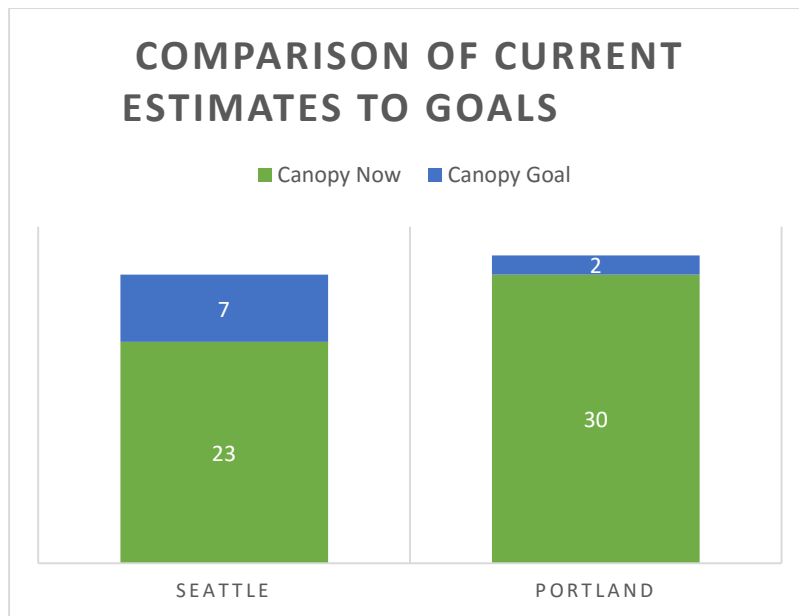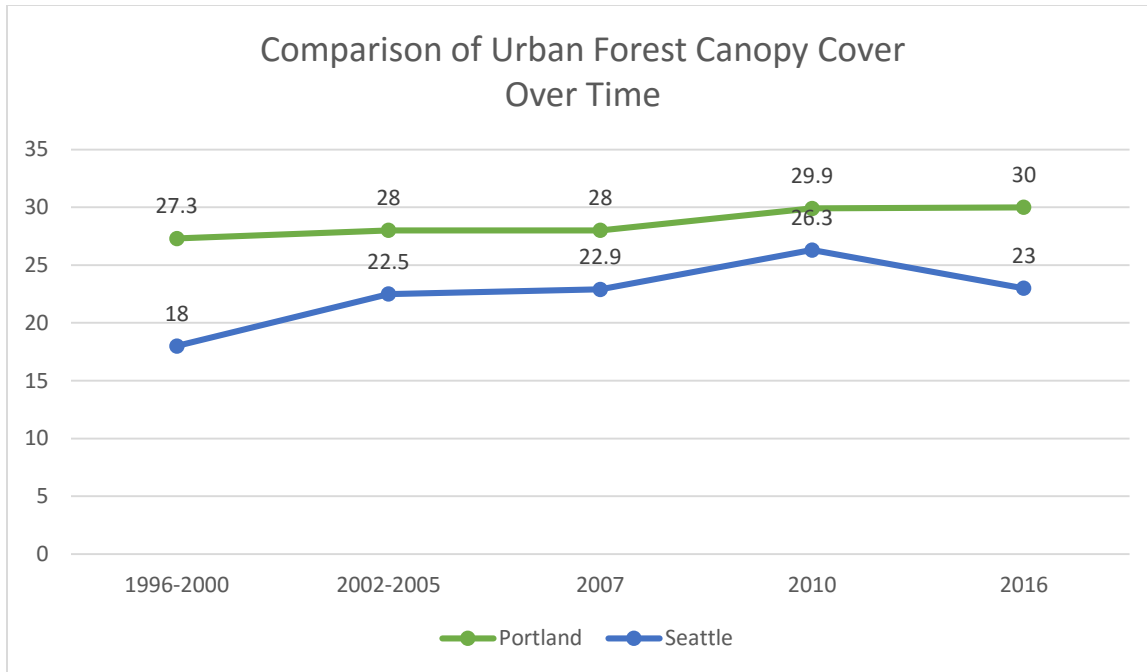
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[20] Metro Policy: Shaping a New Federal Partnership for a Metropolitan Nation. Rep. The Brookings Institution, 2008. Web. 09 Apr. 2016.
<http://www.brookings.edu/~/media/Research/Files/Reports/2008/6/metropolicy/06_metropolicy_executivesummary.PDF>.

other cities policy decisions with respect to the development of an urban forestry régime. Many obvious

elements impact the efficacy of urban forestry programs, such as allocated budget, legislative

frameworks, and authority governing the work in question, but other less obvious factors can have

significant impacts on the success or failure of municipal urban forestry programs. These include the

position of the agency or department within the city government and its access to funds and data from

other agencies, as well as the attitudes of local politicians and administrators to the importance of the

work in question. Particularly in the early stages of establishing an urban forestry regieme, there can

often be a tendency to focus only on parks and public rights of way rather than the broad picture of

forestry across the city[21]. Studies of the efficacy of urban forestry programs in the United States have

shown vast differences in both the scope and authority of those programs and their ultimate success,

with those limited strictly to arboricultural maintenance demonstrating the least public benefit overall[22].

These findings reveal the need for a coordinated package of legislation and implementation strategies

concerning a city's urban forestry agenda. Bound up in how a city chooses to implement and oversee

urban forestry programs are questions of civic identity and priorities[23] and the difference in approaches

between Seattle and Portland highlight both normative value differences and fundamental structural

differences between these two cities.

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[21] Perry, T. "Constraints Limiting the Effectiveness of Urban Forestry Programs (America)." Environmental
Comment November (1980): 10-12. Web.
[22] ibid
[23] Hirokawa, Keith H. "Sustainability and the Urban Forest: An Ecosystem Services Perspective." Natural Resources
Journal 51.2 (2011): 233-259. Web.

Comparison of Urban Forest Canopy Cover Over Time

	1996-2000	2002-2005	2007	2010	2016
Portland	27.3	28	28	29.9	30
Seattle	18	22.5	22.9	26.3	23

Portland ● Seattle

COMPARISON OF CURRENT ESTIMATES TO GOALS

Canopy Now ■ Canopy Goal

	Canopy Now	Canopy Goal
SEATTLE	23	7
PORTLAND	30	2

As a consequence of both a more sustained drive towards urban canopy cover goals and more restrictive policies at both the state and city level, Portland has achieved both a higher initial percentage

of urban canopy cover at the outset of monitoring, as well as more sustained progress over time.

Seattle, who began its active management of its urban forest several decades later, made some

significant progress early on, but during successive years has achieved only modest measurable growth,

and, most recently, an overall decline in urban canopy cover. As a result, while Portland is well on track

to meet its overall urban forestry goals, Seattle is faced with a far more significant gap to close between

the current state of its urban forest and its stated goal. "We thought 30 percent was achievable. We

weren't sure 40 percent was achievable," said City Arborist Noland Rundquist in our interview. "We

were saying, well, we're going to be seeing a lot of development over the next few years. These big lots

with little houses and lots of big trees, those are going to start disappearing, and it's going to be harder

and harder and harder to keep those big trees on private property." Currently, the best available

estimates suggest that up to sixty percent of the city's canopy cover is contained within privately owned

backyards, which are rapidly decreasing within city limits as old, expansive lots are subdivided and

redeveloped to maximize both property owner's profits and the stock of available housing within the

city. "It's very difficult [to reach 30% canopy cover] because the department of planning and

development seems to allow more trees to be cut than tells people to plant trees because the density is

just increasing at such a level that trees are being cut down. And they replace two trees for every one,

but the one they replace could be a huge 50-year-old tree" Lamented Urban Forest Commissioner,

Donna Kostka, echoing the sentiments of several other interviewees who remained both concerned

about the concerted pressure to increase the availability and affordability of housing within the city and

its impact on the city's long-term canopy cover goals. "City-owned land is only a very small percentage

of the total land base. Having canopy on private property is the key to achieving any kind of ambitious

goal." Former Mayor Nickels added, echoing the broad consensus of those interviewed. But while

increasing demand for housing is a certainty, its compatibility with urban forestry goals and who will be

able to effectively champion those goals is far less apparent.

The Seattle model of urban forestry management stresses cooperation, both with different agencies within city government and with private charitable partners. However, a cursory evaluation reveals that there may be limits to what can be accomplished through this approach. Seattle's 2013 Urban Forest Stewardship plan lists four primary goals, the first of which is 'Create an ethic of stewardship for the urban forest among City staff, community organizations, businesses, and restaurants.' In my interview with former Mayor Greg Nickels, however, he acknowledged that without a formalized hierarchy, the cooperative relationship between the agencies involved in urban forestry management in Seattle is likely to be highly dependent on the political will emanating from the Mayor's Office, and thus subject to change during different administrations. Further, each agency is likely to place its primary agency mandate first, and, in situations where those mandates are at odds with the goals of the Stewardship Plan, it seems likely that concerns such as canopy cover goals will not be considered as primary drivers. Each agency is only able to operate within its sphere of influence and, in most cases, only on its own land. In this sense, the Parks Department is only able to undertake work on parks-owned land, and the same is true with Seattle Department of Transportation and Seattle City Light. This means that, with Seattle's approach, there may be significant and challenging gaps in broad oversight directed towards pursuing policy goals across agency boundaries. As former Mayor Nickels suggested to me in our interview, the intention is that big-picture leadership on urban forestry will flow from the Mayor's Office under the Seattle model, but in the Portland model this broad overview is accounted for by the concentrated authority of the Department of Urban Forestry and the mandate derived from a recently updated comprehensive tree code which helps insulates it from the uncertainty of regime change. In Seattle, each transition between mayoral administrations poses a significant risk of agenda drift or mutation. Further, arguably the centerpiece of the Seattle model is the Green Seattle Partnership, which seeks to harness the power of volunteer effort to pursue city agendas, but observation suggests there are some reasons to question its overall efficacy. Green Seattle Partnership

involves consultancy fees paid to the volunteer agencies in question, and the expectation is that every

dollar spent in this fashion is meant to produce three or more dollars in overall benefit for GSP work.

However, in my interview with the Seattle Parks Department representative Michael Yadrick, he

indicated that, in practice, it is closer to a 1 to 1 ratio of money paid in consultancy fees to dollars saved

by volunteer participation. When considered in this light, it calls into question many of the presumed

benefits produced by GSP, though a strict accounting of consultancy fees and volunteer hours fails to

capture the benefit it provides in the important work of community coalition building which can have

positive impacts on urban forestry policy outcomes. Moreover, there are also concerns about the ability

to pursue some reclamation projects through volunteer work, particularly in steep-slope areas that

would require specialized training and equipment and might pose significant risks to volunteers. "The

majority of the easy acres have already been done." Explained Sandra Pinto de Bader, Environmental

Sustainable Policy Advisor with the Seattle Office of Sustainability and Environment. "There are all these

acres that are steep slope that are not safe for volunteers."

One issue that both Seattle and Portland contend with is the ongoing problem of maintenance

of city trees. "A lot of cities have focused on planting lately, but maintenance and maintaining the

canopy that you have are equally if not more important." Said Angie DiSalvo, Outreach and Science

Supervisor with the Portland Department of Urban Forestry. It is a sentiment echoed by Ms. Pinto de

Bader who added, "One of the issues with planting is that planting is a capital project. So you have all

these capital projects which are very sexy, because people can put their names on it, but then the

operations and maintenance of them is something that if you don't have, you can be planting thousands

of trees and if you don't have the ability to maintain them, or in the case of trees to water them, for 3-5

years with these kinds of summers anymore, you're going to lose investment." And even more than

issues of wasted capital investment, she went on to add, "In the forest, a big branch falls and who cares?

Here, a medium branch falls, and it can kill somebody. It destroys a house or a car." Seattle has

historically had insufficient tree crews to proactively maintain its trees. Despite the adoption of the

Urban Forestry Plan, it still has insufficient personnel to do the sort of proactive maintenance necessary

to ensure a healthy forest. "That's the thing, we're trying to balance canopy cover, but then you have

this maintenance that's been pushed off and differed. They're living things – it's just like any

infrastructure. If something goes wrong with a tree, there's sometimes damage. And then you're talking

about adding more… there's a lot of work to get it nurtured so that it's healthy for the future." Said

Michael Yadrick of the Seattle Parks Department. "City light is actually on four-year pruning cycles – they

divide the city in quarters, and they go one year, the next, the next, the next. And the best management

practice of trees is [pruning] every five to seven years. I believe Parks is at 18. And I believe SDoT is

hitting 20." Ms. Pinto de Bader said. "And I've heard someone say that after you've gone beyond ten,

you don't really have a pruning cycle – you're just reacting to hazard trees." At the same time, in

Portland, much of the responsibility for maintaining street trees has been shifted to adjacent property

owners, many of whom fail to properly care for them. Maintenance is crucial for many reasons, not the

least of which is that without a maintenance plan, the average urban street tree lives only 12 to 18

years[24]. Additionally most people's attitude towards urban trees will be determined, as several separate

interviewees expressed to me, by the particular trees they interact with – the ones around their homes

and businesses. If those interactions are positive, they will be favorably inclined towards urban tree

programs, but if the trees they interact with are bothersome or, even worse, hazardous, that will color

their perceptions of trees on a broad scale. Furthermore, as the Green Seattle Partnership begins to

push their first acreage groups to completion, there is concern about a lack of dedicated funding for

maintenance of those areas equivalent to the funding pool devoted to restoration which has yet to be

taken up by the City Council. Indeed, the urban forestry component of the parks department itself

tasked with most of the management duties of the Green Seattle Partnership is itself faced with

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[24] Perry, T. "Constraints Limiting the Effectiveness of Urban Forestry Programs (America)." Environmental Comment November (1980): 10-12. Web.

uncertainty about funding beyond the 2037-time period specified by the plan. This has led the Parks

Department to invest effort in drawing up contingency plans for the possibility that the entire program

will be dismantled in 2037.

In Portland, where Urban Forestry has been more highly institutionalized through agency

structure and legislation, there is less reliance on individual administrations to pursue urban forestry

objectives and informal cooperation between departments, though coordination does occur. "It's just

becoming more a part of the culture that trees are considered and a lot of times our role is just to pipe

up and say, 'did you remember the tree piece? Don't forget the tree piece'" explained Ms. DiSalvo.

Consequently, there seems to be more concrete understanding of both what is expected of individual

actors and more certainty about what the future holds. Where the many pieces of Seattle's urban

forestry program all seem disconnected from each other, particularly in regards to Seattle's Urban

Forestry Commission and other associated urban forestry programs, Portland's Urban Forestry

Commission assumes a much more face-forward role and is directly involved in policy making.

Conversely, Seattle's Urban Forestry Commissioners generally only interact with a single departmental

representative and city council staffer and have no interaction with or influence over the many urban

forestry elements scattered across different city departments. During the course of my research,

members of the Portland Urban Forestry Commission worked in concert with both the City Forester and

members of the City Council to tighten legislation that amended title 11 of the city's code on tree

removal. At the recommendation of Urban Forestry Commissioners concerned with overall tree canopy

cover goals and the same increased developmental pressures that Seattle is facing, additional mitigation

fees were added for the removal of trees over 36" in diameter, setting a base cost for their removal of

$10,800 with an additional cost-per-inch over 36", and requiring 45 day posted public notice of

impending removal. During the legislative process, the Portland City Council noted that the main driver

for the changes to existing legislation was "influenced by the public sentiment they had heard"[25] and

that Portland's Urban Forestry Commission was "closely involved in the amendment process for trees in

development, including holding a public hearing, submitting their recommendation to Council for

amending the code, and yesterday, UF Commissioners David Diaz and Vivek Shandas gave verbal

testimony on behalf of the UFC, Chair Meryl Redisch gave independent testimony, and six UF

Commissioners were in attendance at Council."

While I had initially theorized that Seattle's model, which stresses partnerships with private

charitable agencies, would afford them a distinct advantage over Portland, in Seattle, Forterra was

supposed to increase its volunteer hours per year contribution to 100,000 per year by 2009 but has not

yet met these proposed targets. During the same timeframe, the Portland Parks Department recorded

464,473 volunteer hours in the fiscal year spanning 2013-2014, at a value of almost 5.5 million dollars

and on par with averages recorded volunteer hours in the previous five years without the same

consultancy fees commitments. In this same year, the Tree Steward program trained 194 neighborhood

volunteers to help provide residents easy access to expertise about how to best prune and care for the

trees in their neighborhood. As the majority of any city's overall canopy cover is through trees located

on private lands, this represents a significant contribution to the overall tree canopy cover of a city,

particularly in Portland where street tree maintenance is the responsibility of the abutting property

owner.

Arguably, considering their infrastructure capacity, urban forestry would offer the most potent

benefits in industrialized areas with a higher concentration of pollutants. Yet, in both Portland and

Seattle, these areas are highly under-forested and have a very high ratio of impervious surfaces, leading

to pollutants collecting in storm water runoff and being deposited in city drainage systems, rather than

captured and filtered back into groundwater. "The challenges are it's all about freight movement down

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[25] Cairo, Jenn. "Update on T11 Amendment and FY 16-17 Budget Process." 4 Mar. 2016. E-mail.

there," said Mr. Rundquist. "So, getting a good connection with people in that industry… they don't see

trees as a positive thing. Because you can have issues with trees. If trees aren't maintained well, you can

have problems. If we were able to do a better job of maintaining the trees… If there could be one magic

bullet for increasing acceptance for trees in the city, it would be having really well-maintained trees."

Likewise, both cities could benefit from more full and systemic adoption of emerging scientific research

that casts the issue of urban forestry more in the role of essential urban infrastructure. Though the

many public goods provided by urban forestry are highlighted in their reports and plans, neither city has

yet to pursue real system design from the perspective of infrastructure which would allow those

benefits to be fully realized and maximized on a city-wide level. Such broad-scale planning has only just

started to be undertaken by companies such as Corvias Solutions, which has entered into a public-

private partnership with the county of Prince George in Maryland. Their 'Clean Water Partnership' calls

for Corvias to retrofit up to four thousand acres of both public and private land with green infrastructure

to mitigate stormwater runoff and improve water quality county-wide using guidelines developed by the

Maryland Department of the Environment[26]. This project, the first of its kind, could prove to be a next-

stage model for counties and cities across the nation to fully realize both cost savings and environmental

benefits urban forestry can afford, though widespread adoption will hinge not only on outcomes, but

the ability of those immersed in the issue of urban forestry to adequately reframe urban trees as more

than simply ornamental niceties, but rather a fundamental element of urban design.

Issues of successfully marketing urban forests to the population they serve aside, the most

critical lens through which the success or failure of a city's urban forestry program can be assessed is

that of adaptive resiliency. It is this metric which allows an urban forest to both maintain its own

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[26] "Innovative Collaboration alive, well in government." Insert Name of Site in Italics. N.p., n.d. Web. 07 May. 2016
<http://www.spartnerships.com/innovative-collaboration-alive-well-in-government/>

ecosystem while catering to the needs of its human population[27]. While the evidence seems

overwhelming that urban forests are both integral to the healthy and cost efficient delivery of services

to its citizens, an indicator of quality of life, and a point of pride for many citizens, there is still a struggle

to obtain sufficient governmental mandates to effectively implement their policies, in the case of

Seattle, or adequate funding to address the problems at hand in both cases. To attempt to examine

further why this is, and to explain the difference between the history and impact of Portland and

Seattle's approaches to urban forestry, I will expand upon three key areas of interest and examine their

possible effects on development and outcomes: Agenda Setting, Political and Organizational Structures,

and Institutionalization.

Agenda Setting

      Local governments, particularly those imbued with strong leadership and defined agendas, have

a unique capacity to translate environmental plans and norms into action and are positioned to render

abstract concepts into more readily understood, concrete models personalized to their constituents[28].

However, first they must decide if it is in both the best interest of their careers and the city at large to do

so, and there are a number of factors that determine if an issue like urban forestry will be successful in

finding a place on the agenda of local politicians. Environmental benefit programs like urban forestry

have broad but somewhat shallow popular appeal among urban populations, and are not always a

priority for legislators concerned with the most immediate business of their cities. When juxtaposed

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[27] Alberti, M. Advances in Urban Ecology: Integrating Humans and Ecological Processes in Urban Ecosystems. New York: Springer, 2008. Print.

[28] Gambert, S. (2010). Territorial politics and the success of collaborative environmental governance: Local and regional partnerships compared. Local Environment, 15(5), 467-480.

against economic development issues like unemployment and local investment, or 'bread and butter'

issues such as housing availability, or health and safety issues, urban forestry may find it difficult to

remain a priority on City Council agendas. The question of how some issues are taken up by politicians

and others relegated to the legislative dustbin has been widely studied at higher levels of state and

federal government, and research devoted to explaining the process of agenda setting at the local level

suggests that municipal-level dynamics largely mirror those at the state and federal level[29]. Prevailing

wisdom dictates that the fundamental motivator at the city level of government is the desire to

maximize growth, though a growing body of evidence suggests that growth also begets a great deal of

conflict, as a variety of interests attempt to channel that growth and shape its ultimate direction to their

own ends[30]. One of the best predictors of an issue being adopted as a priority by a city's legislators is its

capacity to translate into public support and, ultimately, votes.

Urban forestry faces a lingering problem of public perception which views environmental

concerns as a luxury good from a policy perspective, subordinate to more immediate economic and

public safety concerns, an opinion which is reflected in legislative agendas[31]. This is, in part, a legacy of

many environmental movements that have emphasized wilderness preservation and issues of habitat

loss in their rhetoric, which allows detractors to frame environmental concerns as an issue of aesthetics.

Further compounding the problem is the fact that, while generalized approval ratings for environmental

programs is positive, the gap between polling of the broader population and electoral support often falls

short of needed majorities[32]. This means that while environmental issues are received well by

constituents, there is some evidence to suggest that championing environmental causes does not

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[29] Sapotichne, Joshua, and Bryan D. Jones. "Setting City Agendas: Power and Policy Change." The Oxford Handbook of Urban Politics. By Karen Mossberger. New York N.Y: Oxford UP, 2012. 446. Print

[30] Sapotichne, Joshua, and Bryan D. Jones. "Setting City Agendas: Power and Policy Change." The Oxford Handbook of Urban Politics. By Karen Mossberger. New York N.Y: Oxford UP, 2012. 446. Print

[31] Paehlke, Robert, and Pauline Vaillancourt Rosenau. "Environment/Equity: Tensions in North American Politics." Policy Studies Journal 21.4 (1993): 672-86. Web.

[32] ibid

translate to vote-getting in elections, making it a less attractive means of generating electoral support to legislators than other issues[33] that have a more proven track record of garnering votes. Issues raised in terms of sustainability have the potential to harness more human-centered cost-benefit arguments. "We've tried to tactfully argue is that it's well beyond the trees, it's actually trees as a mechanism for supporting health and human well-being." Said Dr. Vivek Shandas, Founder of the Sustainable Urban Places Research (SUPR) Lab at Portland State University and a member of the Portland Urban Forestry Commission. "And when we've used that angle, we've gotten a lot more attention [from the City Council] through that approach." This data-driven approach, he went on to explain, can further amplify the importance of urban forestry for local politicians, as qualitative arguments that are tied to measurable performance outcomes offer politicians a means to deliver to constituents on previously promised commitments, rather than merely representing absorbing new responsibilities.

Often the timescale dimension of these issues and their emphasis on impacts to 'future generations' diminishes the immediacy of these arguments, particularly when juxtaposed against issues of housing availability and affordability or employment at the present moment in time. This is a broad pattern with environmental issues which tend to involve timeframes much lengthier than an election cycle and less concentrated impact. In both Seattle and Portland, communications surrounding urban forestry issues have been primarily conveyed to the public using classic environmental policy framing that characterizes legislation as a safety net measure which ensures minimum standards are met, but the public goods inherent in urban forestry may be better demonstrated through the use of a sustainability policy frame[34] which highlight the interconnectedness of environmental and economic benefits that flow from the presence of a well-designed and maintained urban forest within a city. In this sense, advocates for urban forestry might find more success by framing issues of urban forestry as

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[33] Gambert, S. (2010). Territorial politics and the success of collaborative environmental governance: Local and regional partnerships compared. Local Environment, 15(5), 467-480.

[34] Lenschow, Andrea, and Anthony R. Zito. "Blurring or Shifting of Policy Frames?: Institutionalization of the Economic-Environmental Policy Linkage in the European Community." Governance 11.4 (1998): 415-41. Web.

issues of infrastructure primarily concerned with the delivery of services to citizens despite the prevailing perception of trees as largely ornamental. While Portland has pursued an agenda that attempts to delineate boundaries sharply with respect to developers and has a rigorously enforced system of permitting and mitigation fees it imposes with respect to development, Seattle has adopted a softer approach that attempts to position its urban forestry regulation as less directly in opposition to challenges of density and development.

Another important determinant which impacts the ability of an issue like urban forestry to gain legislative traction is strong support from those with access to policymakers. Opposition to urban forestry legislation sometimes stems from local businesses who fear restrictive legislation, architects, developers, and utility companies or departments who can view trees as potential impediments to the delivery of services[35]. Land development as a result of urbanization has outpaced population growth by 50% in Seattle[36], resulting in significant profit for firms and agents involved in this transformation. This figure is more constrained in Portland where land use regulations were implemented earlier, and urban growth was more successfully bounded by zoning barriers. However, these restrictions, which have impacted the ability of those with a vested financial interest in increased development to pursue their business objectives, have generated hostility towards urban forestry as an issue at certain junctures, as reflected in an anecdote shared by Ms. DiSalvo.

> "The oversight advisory committee… was a group of citizens that met monthly with city staff to review how the code was working, and it was made up of some tree folks. About a third of them were from the development community and various other groups, and it got so contentious that the last few meetings, everyone representing the development community actually quit. They got up, and they walked out and said 'we're done, we

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[35] Perry, T. "Constraints Limiting the Effectiveness of Urban Forestry Programs (America)." Environmental Comment November (1980): 10-12. Web.
[36]Alberti, M. Advances in Urban Ecology: Integrating Humans and Ecological Processes in Urban Ecosystems. New York: Springer, 2008. Print.

don't feel like you guys are listening to us, we don't feel like you're able to
compromise'… so this one great place where everyone was coming together, at the very
end, the development community bailed on that process."

Research has indicated that tension between environmental and economic goals has been, and remains,
a significant impediment to the adoption and implementation of environmental policies, such as urban
forestry regimes[37]. However, many case studies suggest that this tension is merely a perception, and
that despite concern over onerous regulations stifling business growth and development, urban forestry
programs can offer cities many tangible cost-savings and property value enhancements in the long term.
Individual developers may perceive cost savings in circumventing urban forestry regulations, but
collectively, costs would be significantly increased by the need for additional infrastructure and
decreased property values. In fact, highly invested constituencies can also pose difficulties in attempts
to arrive at cooperative solutions, as Mr. Rundquist recounts, recalling the early development of
Seattle's first urban forestry management plan. "The developers weren't crazy about it, but it was more
tree advocates [that objected to the initial plan] that were saying 'you're doing this wrong and you're
doing this wrong'…" Ultimately, however, both developers and local environmental advocates have a
vested interest in establishing a codified set of regulations governing urban forestry.

Oppositional barriers from those with either personal or economic investments into the issue of
urban forestry are only one possible obstacle to the successful establishment of urban forestry as a
matter of priority within city governance. "With environmental and sustainability discussions, there are
certain things that are catalytic events, and those that are politically savvy can capitalize on those
catalytic events to underscore their agenda." Said Dr. Shandas, speaking of a recent air-quality issue in
Portland that drew attention to the benefits of urban forestry, though, more broadly, his observations
could be just as easily applied to the sudden and marked media and political interest in Seattle's urban

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[37] Paehlke, Robert, and Pauline Vaillancourt Rosenau. "Environment/Equity: Tensions in North American Politics."
Policy Studies Journal 21.4 (1993): 672-86. Web.

forestry that resulted from the grim 1999 American Forest Foundation report. In a 2014 survey of

professionals involved in the issue of urban forestry in the greater Portland Metropolitan Area,

researchers attempted to discern the most substantive barriers to either instituting or increasing urban

forestry programs in the region. The most commonly cited need at 38.5 percent was funding,

particularly lack of sustainable funding. The three next most frequently cited needs were political

support (19.6%), outreach and education tools (11.1%), and citizen demand (7.7%). When viewed

through the lens of agenda setting, these three items can be conflated and connected with the first, as

citizen concern often begets political will, which, in turn, leads to a place on the municipal agenda and

funding for the project, department, or program. With respect to barriers, results were similar, with the

most commonly cited barrier to increased urban forestry work being insufficient funding (41.4%), and

the next three most common reasons cited being low public support or interest (14%), history of

conflicts surrounding urban trees (12.4%), and lack of political support (11.5%)[38]. In this context, the

mention of history of conflict is significant, particularly in the context of Portland, as it suggests that

despite broad legislative support that has resulted in a comprehensive uniform tree code and the

establishment of a dedicated department, pressure from outside sources may be brought to bear to

limit its overall ability to effectively administer them through insufficient funding.

Political and Organizational Structures

Many of the core differences in outcomes between the Seattle and Portland urban forestry

régimes stem from fundamental differences in how the cities themselves are structured and, as a result,

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[38] Driscoll, Abbey N., Paul D. Ries, Jenna H. Tilt, and Lisa M. Ganio. "Needs and Barriers to Expanding Urban Forestry Programs: An Assessment of Community Officials and Program Managers in the Portland – Vancouver Metropolitan Region." Urban Forestry & Urban Greening 14.1 (2015): 48-55. Web.

how the programs were implemented and administered. Portland, as earlier mentioned, began a program of conservation and careful stewardship of its urban trees remarkably early, well before there was any broad scientific recognition of the importance of urban forestry. Importantly, at several key points in the development of their urban forestry program they made the conscious decision to construct new positions, departments, and administrations, rather than attempting to rechannel or repurpose preexisting ones. One benefit inherent to the Portland approach is that it avoids the challenge of having to overcome institutional inertia to change or create normative and procedural buy-in from existing staff. By dedicating specific staff to urban trees, by creating the position of Urban Forester in the Portland City Government, and, later, the Department of Urban Forestry, they provided a clear mandate to their personnel to pursue very specific goals and targets without having to balance those against other commitments and pre-existing agendas. Many of the most successful urban forestry programs have an urban forester position situated within a central agency, with its own mandate and authority, who participates in collective decision-making processes concerning urban planning with other agencies[39]. Conversely, Seattle came to the issue of urban forestry several decades later,only after their urban forests were already in crisis, and developed a system that relied on a broad-based collaborative plan that marshalled the capacity of not only multiple city departments and agencies within its government, but also private stakeholders with a vested interest in restoring and preserving green spaces in Seattle. These fundamental differences in municipal government structure play a significant role in the strategies pursued by the two actors and the resulting outcomes.

Seattle is structured as a traditional strong mayor and council style government, which divides executive and legislative authority in a fashion reminiscent of our federal government. This form of

[39] Perry, T. "Constraints Limiting the Effectiveness of Urban Forestry Programs (America)." Environmental Comment November (1980): 10-12. Web.

municipal government is one of the most popular in America, especially among large American cities.

Echoing the governmental structure of State and Federal government, the separation of between

branches of Seattle's municipal government allows for a high degree of specialization, while also

requiring some degree of consensus between Mayor and Council in order to institute significant changes

to both departmental structures and municipal codes. With the recent voter-approved alteration to the

city council that requires the majority of councilpersons to be elected by district, the potential for

further compartmentalization is a distinct possibility, a shift that has many involved in the issue of urban

forestry in Seattle preparing to advocate for the importance of urban forestry on the level of individual

legislative districts, rather than city-wide, though the full implications of this change on how urban

forestry is presented and received as an issue in Seattle remain to be seen. Broad-based programmatic

and staffing changes are common in Strong-Mayor/Council forms of municipal government. As a

consequence, each administration, particularly in Seattle where mayoral turnover is especially common,

has a limited period of time to gain traction with new initiatives and agendas. This phenomenon is

observable even at lower policy levels, such as the internal procedural behaviors of agencies which do

not rise to the level of legislation.

Portland's city government retains a highly unusual 'commission' structure where administrative

and executive power is not divided among branches of city government, but rather concentrated in the

city council where the Mayor sits as 'first among equals'. Council Members and the Mayor jointly

oversee city departments and bureaus and share both executive and legislative authority, including

policy development and implementation. This council form of government is highly unusual in modern

times, and Portland is the only large city in the United States that still utilizes the commission system,

with the citizens of Portland having, on multiple occasions, rejected attempts to restructure municipal

government along lines more traditional in the modern era. As a singular entity, little large-scale

research has been conducted on the benefits and flaws of such a system, though "The commission form

of government does have its advantages. Giving elected officials executive duties encourages

entrepreneurial and creative candidates to seek office", argued the City Club panel in its 2007 report,

which also noted that commissioners' "detailed working knowledge of bureaus" tends to foster

innovation[40]. There is some evidence that the commission form of government has engendered both

process innovation within local government and citizen engagement in the broader community, though

there are also suggestions that these benefits frequently come at the cost of efficiencies common to city

governments where there is more specialization. Though not well-studied, the shared mandate

structure suggests that the commission style of government found in Portland may also foster more

programmatic continuity between administrations, as elections are held on a cycling basis that creates

less disruption in city government, and lessens the politically generated need to demonstrate policy

innovation at the inception of a new régime that is common to strong-mayoral systems. This would

insulate any program innovations developed from the impact of regime change and may, in part,

account for the sustained commitment Portland has displayed for urban forestry.

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[40] "Portland's weird government structure helped fuel utility ..." Insert Name of Site in Italics. N.p., n.d. Web. 07 May. 2016 <http://www.oregonlive.com/opinion/index.ssf/2014/04/portlands_weird_government_s>.]

Urban Forestry in Portland
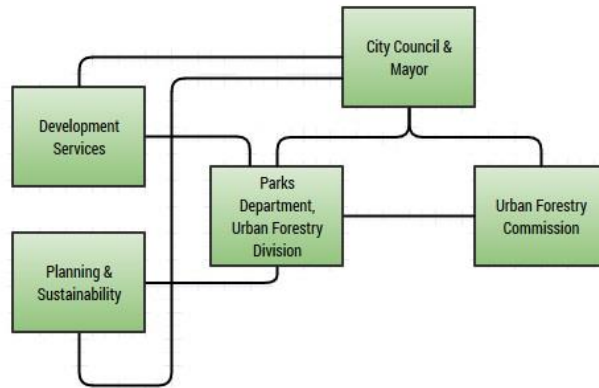
Urban Forestry in Seattle
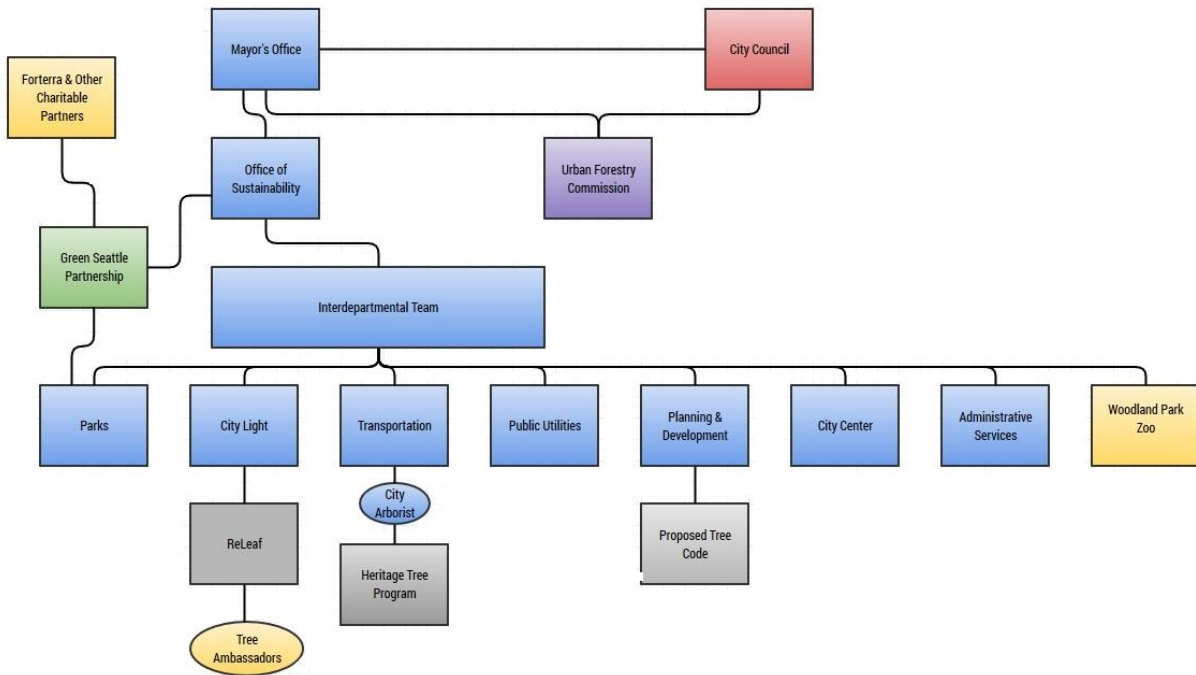
Differences in both broad legislated regulations and subtle operational influences can be observed with respect to the way Portland and Seattle address the removal of trees from private property. In both, city-issued permits are required for the removal of most mature trees from privately owned lands. Outside of certain developmental situations or instances of tree species designated as invasive or problematic, these permits are commonly only granted when an arborist has certified that the tree in question is unhealthy or poses a public danger. However, while in Portland these assessments are conducted by city arborists employed by the Department of Urban Forestry, in Seattle, citizens seeking a permit for the removal of a mature tree retain and pay privately contracted arborists to assess if there is a valid reason for removal of the tree that rises above the level of mere preference or inconvenience. This creates a conflict of interest in that the person paying the arborist has, by virtue of having sought out the permit in question, already demonstrated a preferred outcome and has a compelling means of influencing the arborist's assessment, as he or she will ultimately be the one compensating the arborist for their work. "The problem is you can go out and get any arborist's risk assessment." Explained Tom Early, Seattle Urban Forestry Commissioner, "And there's no real third party review on that." Additionally, there is a striking difference between the regulations governing privately held trees in Seattle and Portland. Portland's comprehensive tree code was fully implemented and, after substantial multi-year efforts, recently updated and strengthened in some areas. Seattle, in direct contrast, has not been able to successfully update their own piecemeal regulations governing trees despite several attempts and many elements of how it is applied in practice spring, not from legislation, but rather from mere executive guidance, some of which is many years out of date. "It's not codified, and therefore, it's not 'the law' of Seattle – it's a guidance document. Which means great things when you're doing policy planning, but it doesn't mean anything when it comes to making someone do something." Said Mr. Early. "We have a fractured tree code."

His sentiments were echoed by fellow Commissioner, Donna Kostka. "It's so complicated… it's really difficult to understand. You have to be a developer… At some point, the department of planning is going to have to update their regulations instead of using the old ones [that call for] two for one… with no provision for what size it is, or how tall it is." The 'two-for-one' in this instance is a Seattle policy that allows private property owners to, under certain conditions, remove trees without paying mitigation fees or fines on condition that they agree to replant two trees in their place. "That [2-for1 policy] was an executive order issued by Mayor Nickels saying that out of each and every tree removed out of city property by departments, they will plant two. Now, the problem I have with that is that it's a great political statement in the sense that it makes you be responsible and take action, but if you're removing a 150-year-old conifer and planting two crab apples," explained Ms. Pinto de Bader, highlighting the inherent problem with the uncodified policy which allows very large mature trees that offer concentrated urban forestry benefits to the city at large with very small, juvenile trees. An issue of broad concern among those involved with urban forestry in Seattle, these two-for-one plantings are frequently insufficient to actually offset the benefits provided by the original tree and may never be, even if the two trees do eventually become established and reach full maturity. "The… effort is getting the municipality to actually codify something that puts some teeth to preserving what we have, because right now there's a very disjointed selection of codes that address trees… it's very difficult for the people who are coordinating those efforts to point to anything rock-solid in order to save it. And there are some very minutiae elements that continually trip up the preservation of trees," lamented Mr. Early, acknowledging that in this instance there is no substitute for the legislative support of the city council in providing, or failing to provide, a framework that would allow for a firmer footing to stave off canopy losses in the face of further development. The tree code, which falls under the purview of the Department of Planning in Seattle, has been an ongoing issue. Several potential drafts of updated and fully codified legislation have, over the past decade, made their way to the Seattle City Council for

consideration, but thus far they have been unwilling to take it up and approve it, perhaps because it

remains, as one interviewee termed it, a divisive "lightning rod" issue. Even in Portland, where their

Department of Urban Forestry has enjoyed a much more direct role in their tree code legislation, and

has had broad City Council support, it has proved difficult to push from a proposal document to fully

implemented legislation. "It took about eight years for our revised tree code to get through and get

implemented." Ms. DiSalvo recalls, a timeframe that puts Seattle's much more problematic legislative

situation into stark perspective.

While Portland's implementation strategy of establishing new departments and positions within

its government has certainly streamlined and enhanced their pursuit of urban forestry goals, it risks

provoking backlash and resistance from other agencies and officials who feel their authority has been

subverted in pursuit of these new targets. Researchers have noted that no municipal government or

agency can function entirely independently and, to achieve significant efficacy, they will need to

coordinate their activities within a system of diverse, sometimes conflicting, systems and constraints[41].

"There's always going to be inter-agency conflict," said Mr. Rundquist. "And so I just think it's fortunate

that street trees are in transportation [in Seattle] because… we're part of that process from day one. If

we were Parks and Recreation managing street trees, we'd be fighting for a place at the table." This

sentiment was echoed by Ms. DiSalvo, who lamented the difficulty Portland's Department of Urban

Forestry experiences coordinating with the Portland Department of Transportation. "I feel like Seattle is

way ahead of us in that respect, with how they've set some best practices working with nontraditional

placement of trees in rights of way. They have a great manual for that, and we're using that as an

example as we try and work with our PDoT group, going 'look, we can do this together, we can set these

standards together' and find alternate ways to work around trees, but it's just not been a priority for

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[41] Alberti, M. Advances in Urban Ecology: Integrating Humans and Ecological Processes in Urban Ecosystems. New York: Springer, 2008. Print.

them." Indeed, the internal politics of coalition building within an administration are frequently the best

predictor of the success or failure of a new policy agenda[42]. "As long as we coordinate… if DCI puts

together some sort of development situation where canopy decreases by 50% on private property, it's

going to have to increase by a certain percent within the street rights of way, within the parks land, and

so that's where the coordination comes in," said Mr. Rundquist. "If we really know what's happening

with the actions of one section, we can pick it up and do a good job." This applies both to the

cooperative interaction between city agencies, and also between local government and private actors,

as with Seattle's Green Seattle Partnership which provides added benefit to sustaining green agendas.

This is, in part, because collaborative arrangements at the local government level can formalize issue-

specific lobbying in ways that help institutionalize green priorities into the fundamental structures of

local agencies by creating a sustained awareness of environmental issues and providing citizen-actors a

channel to be heard by local politicians[43]. Further, undertaking the work of building a coalition of

participants and supporters within the city through work with private charities and organizations is a

worthwhile investment for local politicians, as it builds a coalition of invested voters who can voice

support at critical moments and convey government and departmental messages to the broader public.

As former Mayor Nickels said, "Private partnerships provide a trusted source of information even when

people are reluctant to take government at its word."

One very marked drawback to the collaborative approach that Seattle has adopted is the

diffusion of responsibility for urban forestry outcomes among its tangled network of partners. There are

many agencies and stakeholders involved, each working within their own boundaries and fiefdoms, but

no single overriding agency or official who is ultimately responsible for the stated thirty percent canopy

cover goal. "One of the things that some of the people argue that the comprehensive plan should do in

[42] Sapotichne, Joshua, and Bryan D. Jones. "Setting City Agendas: Power and Policy Change." The Oxford Handbook of Urban Politics. By Karen Mossberger. New York N.Y: Oxford UP, 2012. 448. Print.
[43] Gambert, S. (2010). Territorial politics and the success of collaborative environmental governance: Local and regional partnerships compared. Local Environment, 15(5), 467-480.

Seattle is that forestry and urban forests, the functions are fragmented across departments," said

Seattle Urban Forestry Commissioner, Dr. Gordon Bradley. "And so there're pieces of street trees in

transportation, and parks in parks, and city light has some functions, just a whole host… so there's a lot

of different things. You go across the lake to Bellevue and they've organized theirs all together." In

addition to the inherent problems of collaborative municipal government models, in instances where

strong upstream policy champions or institutional mandates are absent, loosely defined collaborative

networks can be used to shield individual actors from responsibilities for sub-optimal outcomes or

outright failures, making it difficult to hold any one particular actor or agency responsible[44]. When I

asked Ms. DiSalvo how effective she imagined Portland would be in the pursuit of their urban forestry

goals if responsibility were similarly scattered across a host of city agencies, she concluded, "I think it

would be put to the wayside or just given lip service."

Previous research has indicated that collaborative models of environmental governance are

difficult to implement effectively, and frequently encounter problems such as barriers between

institutions, territoriality, sluggish decision making, resource imbalances, questions of legitimacy and

authority, and outsized implementation costs[45]. Further, the inherent ambiguity of these models can

sometimes be used to obfuscate other interests or result in legislation that that serves to conceal

unrelated agendas[46]. Once brought into the fold of local government, some analyses have indicated that

non-governmental agencies have little incentive to challenge the status quo or engage in policy

innovation after being brought 'into the fold'. Researchers have noted minimal impact on overall

efficacy in collaborations between NGOs and local environmental governance[47]. The Green Seattle

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[44] Gambert, S. (2010). Territorial politics and the success of collaborative environmental governance: Local and regional partnerships compared. Local Environment, 15(5), 467-480.
[45] ibid
[46] ibid
[47] Kraft, Michael. "Ecology and Political Theory: Broadening the Scope of Environmental Politics -- Environmentalism and the Future of Progressive Politics by Robert C. Paehlke / Rational Ecology: Environment and Political Economy by John S. Dryzek / and Others." Policy Studies Journal 20.4 (1992): 712. Web.

Partnership, implemented to create a partnership between the City of Seattle and a host private

charitable organizations, is a potential example. At the outset, when the GSP was championed by its

creator, former Mayor Greg Nickels, there was considerable effort to push the boundaries of urban

forestry in Seattle, with its primary charitable partner contributing three million dollars of private funds

towards the GSP plan and the city pursuing several additional urban forestry policy agenda items.

Subsequently, however, this dynamic has been reversed and rather than being a significant source of

outside funds for use in pursuing plan objectives, the Seattle Parks Department has regularly been

contributing money to these private charitable agencies through the disbursement of 'consultancy fees'

that average half a million dollars annually. During this same period, GSP's lead charitable partner,

Forterra, has been focused on replicating Seattle's public/charitable structure in other surrounding

communities, and now participates in eight similar arrangements with other regional municipalities.

"Green Seattle Partnership… was so wildly successful that instead of expanding it, a lot of its major

sponsors decided to take it and replicate it across the United States – which was a wonderful

compliment to the program, but also not very helpful to our local efforts," said Councilmember Early. In

my interview with Seattle Parks liaison to the Green Seattle Partnership, Michael Yadrick, he said, "The

big promise is, and this is what we strive for, is that every dollar of public money spent… is three-for-one

leverage. We rarely come close to this. What we see by tracking… we generally get a one-to-one match."

Whereas one would expect the City of Seattle to achieve significant cost-savings by leveraging its

relationship with these private charitable organizations that allow it to maximize its programmatic

effectiveness, without the strong leadership of an invested administrator, this does not seem to be

occurring. Indeed, their work with volunteers appears to come at a cost that encompasses both money

and time, as Yadrick went on to say, "there's a cost involved in the volunteers… Generally, I spend at

least 25 percent of my time working with volunteers. Overall last year we had 70,000 volunteer hours

and worked with 12,000 people." And while 70,000 hours sounds, on its face, as if it should provide

ample benefit to justify the expenditure of management time, the aforementioned one-to-one

compensation ratio generated by the partnerships with GSP affiliated charities highlights that Seattle

might just as easily have contracted this work outright. "City Light has 12 tree crews. We have two." Mr.

Yadrick said. "I would say we're under-staffed and could do with double that amount."

A study on the barriers to implementation of further urban forestry efforts undertaken in

Portland cited lack of funding as the most significant factor.[48] Though similar studies in other

municipalities have yet to be conducted, it is reasonable to assume these insights apply to urban

forestry programs more broadly. Encouragingly then, Seattle voters recently passed the Metropolitan

Parks Levy ballot initiative which has increased funding for the Seattle Parks Department and provided a

much-needed long-term funding source insulated from the vagaries of the budgeting process. However,

its collaborative approach means that urban forestry is still in many ways contingent on the cooperation,

sometimes even the express blessing, of agencies who have vastly different agendas and mandates.

"First and foremost," Michael Yadrick said "Yeah, their business models come first. They have a mission.

Trees is kind of subsidiary to it… City Light is all about maintaining electricity to their customers, and

SDOT is about the flow of traffic…" Yet, as he went on to confirm, "They [Seattle City Light and SDOT]

have dominion over more trees" as those trees are situated on property that their agency administers.

Seattle City Light is the city agency tasked with managing the city-wide tree planting program 'ReLeaf'

which plants thousands of trees annually. While Seattle, as part of their Urban Forestry Stewardship

Plan, has a stated goal of pursuing a planting scheme that broadly reflects the composition of native

late-succession Pacific Northwest forests, and while it is evergreens, particularly broad-leaf evergreens,

which provide the most potent stormwater mitigation benefits, these are also the variety of trees most

statistically underrepresented in Seattle's urban forestry composition dynamics. "Generally, the trees

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[48] Driscoll, Abbey N., Paul D. Ries, Jenna H. Tilt, and Lisa M. Ganio. "Needs and Barriers to Expanding Urban Forestry Programs: An Assessment of Community Officials and Program Managers in the Portland – Vancouver Metropolitan Region." Urban Forestry & Urban Greening 14.1 (2015): 48-55. Web.].

they're [ReLeaf] planting too are not the long-lived native conifers…" Mr. Yadrick Confirmed. "They're

ending their life in like 40 years." These smaller deciduous trees that Seattle City Light has mostly

selected for their planting program may not be in keeping with Seattle's urban forestry goals, but they

are also unlikely to prove problematic later with respect to power lines and require intervention from

City Light tree crews. This begs questions about what happens to urban forestry goals when they come

into conflict with more fundamental agency mandates. As Mr. Yadrick said, "The tree folks [within those

agencies] that manage vegetation, they love it, but they're battling within their own departments."

Centralization brings its own challenges, however. Portland's Department of Urban Forestry may

have legislative charge of all city trees, including those which line Portland's streets, but as noted earlier,

this does not necessarily mean that the Department of Urban Forestry and Transportation will have a

well-coordinated working relationship. As Mr. Rundquist said, "There's always going to be inter-agency

conflict. And so I just think it's fortunate that street trees are in transportation because… we're part of

that process from day one." Though Seattle's cooperative structure has its challenges and design flaws,

their approach does stave off a municipal-level version of the sort of insurgent resistance that Oregon

has seen. By affording all interested parties a voice through official channels, and the promotion of a

constructivist network-wide buy-in on the issue of urban forestry rather than employing a model that

could leave one agency feeling isolated and promote resentment against external mandates imposed

without consideration, Seattle has minimized inter-agency conflict. When I spoke with Meryl Redisch,

Chair of Portland's Urban Forestry Commission, in the wake of their having successfully amended the

city's tree code, I asked her if she felt the Urban Forestry Commission had adequate support for their

proposals to the City Council. She indicated that she felt they did, with the exception of a lone

Councilmember she felt was 'a transportation guy', which speaks to the presence of this inter-agency

dynamic that Mr. Rundquist alluded to, though ultimately it seems not to have adversely impacted the

ability of the Department of Urban Forestry or the Portland Urban Forestry Commission to secure

legislative traction in this instance. Future outcomes, particularly in the face of increasing pressure to

address issues like density that can be framed as oppositional to a commitment to urban canopy cover,

remain uncertain. "I don't have a genuine sense that the Urban Forestry Commission or Division of

Urban Forestry has the kind of regulatory, or even political, capital that the Department of

Transportation has, or Planning and Sustainability has, or the Housing Bureau has," said Dr. Shandas

regarding the current departmental balance of power in Portland. "If I was asked to identify which

bureau is a bureau that has tremendous political capital when it comes to being able to move agendas, I

wouldn't put Urban Forestry at the top of that list."

Institutionalization

Institutionalization in this context refers to the imposition of complex and durable structures

within governments that are composed of both norms, processes, and dedicated resources. Among the

many differences between the approaches of Seattle and Portland, perhaps the most obvious is the

disparity of both time and depth of integration of Seattle's urban forestry efforts within city government

as a whole when juxtaposed with Portland. The two are an inextricable cause-and-effect advantage, as

certainly the unbroken length of time which Portland has pursued a healthy urban forest has, in turn,

resulted in the pursuit of these goals being folded deeply into the legislation and systems that make up

Portland's system of governance. Previous research on the process of institutionalization of norms and

processes within governments point to the need for the coalescing of several different factors at a

particular moment in time, such as the presence of strong agents or champions within local

government, the presence of sufficiently interconnected networks that will allow for the transfer of both

information, expertise, procedural standards and also normative prioritization, and the prospect of a

beneficial outcome that is broadly perceived as attainable and realistic[49]. This programmatic providence

is most likely to occur at the local level of government, where networks are smaller and more

interconnected than at the state or federal level and thus denser, and where individual behavior is most

likely to be impacted by alterations to intra-agency policy and the implantation of new municipal

legislation. While these conditions are less pronounced in large, more complexly structured cities, it

nonetheless remains true in comparison to state and federal governments, which function on

exponentially broader scales of both complexity and geography. At the same time, the most likely

impediment to the implementation of such changes is the lack of readily available resources, which

include both tangible resources like availability of funding, and more intangible resources, such as access

to specialized knowledge, research, or expertise. Local governments in particular often also confront

issues of capacity for implementation, as city governments and municipalities are frequently beholden

to upstream authorities like state and federal governments. These barriers can provide significant

challenges and impediments to local governments seeking to implement urban forestry programs[50].

Though not unique to the municipal level of government, another significant impediment to

programmatic efficacy is the short-term development cycles dictated by elections which, in many cases,

do not allow sufficient timelines to effectively establish new agency processes. The administrative

turnover in city governments that occurs as one administration succeeds another creates a political

incentive for "visible projects"[51] which the administration can use to demonstrate efficacy to the public.

This means that, in many cases, it is not politically expedient to invest effort in the continuation of a

previous administration's programs, but rather to design new ones that can be fully claimed and

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[49] Pasquini, L., & Shearing, C. (2014). Municipalities, politics, and climate change: An example of the process of institutionalizing an environmental agenda within local government. The Journal of Environment & Development, 23(2), 271-296.
[50] Pasquini, L., & Shearing, C. (2014). Municipalities, politics, and climate change: An example of the process of institutionalizing an environmental agenda within local government. The Journal of Environment & Development, 23(2), 271-296.
[51] ibid

exploited by political agents. Since the 1990s, Seattle has only re-elected one mayor: Greg Nickels in

2005. Consequently, the high turnover rate among Seattle mayors has presumably limited their ability to

see any particular program become fully established, and seems to have led to a lack of clarity and

leadership in the environmental programs that have survived. Aside from Seattle's comparatively late

arrival to awareness of urban forestry as an issue that warranted active governmental management,

their efforts have certainly been hindered by the short timeframes any particular administration has to

implement its remediation efforts, as well as the need for each administration to distinguish their

policies and approaches from their successor and build their own coalitions within government.

"McGinn was an outsider, an amateur, if you will," former Mayor Nickels said during our interview. "And

so he didn't understand how to make government work. I've been in politics since I was a teenager. I've

been in local government since I was a teenager, so I watched and learned from people who did it well

and people who did it badly, and I sort of took notes. And the fellow who proceeded me was a good guy,

very smart, visionary… didn't have a clue how to get things done. When he came in, for instance, he

didn't fire anybody; he kept all of the old directors… and so nobody felt any loyalty to him or any real

need to pursue his agenda."

Unlike Portland, who has consistently displayed a preference to initiate new governmental

structures and policies, Seattle has remained committed to both the process of internal coalition

building within administrations and across departments, and the attempt to repurpose existing agencies

to address new challenges and mandates. Currently, its goal of achieving thirty percent city-wide canopy

cover by 2037 is pursued in part by a coalition of nine stakeholder agencies that include the Office of

Sustainability and Environment, the Parks Department, the Department of Planning and Development,

Seattle Department of Transportation, Seattle City Light, and four smaller agencies who administer city

land which contain a significant number of trees. This is a structural choice that may require additional

time and external pressure in order to have each partner agency successfully institutionalize urban

forestry within their agency mandates. When asked how he felt the cooperative relationship between city departments worked on the issue of urban forestry, Mayor Nickels responded "Not well. By a person's nature… if they're the City Light Chief, they're going to focus on delivering electricity. So they get into these silos, and the job of the Mayor, I believe, is to figure out what the common good is, set that goal, and then herd everyone towards it. So, I was criticized over time for having an administration that was really focused – that's why. If you don't have discipline, if the directors don't understand that if they don't get out of their silos and cooperate with achieving a city-wide goal, that it's not going to happen. And so you've got to send a message. Continually. Then you build up a culture of teamwork. Once you get that culture in place, then it's fine." Still, when asked if he thought the issue of urban forestry had suffered as a result of the transition from his administration to that of his successor, former Mayor Mike McGinn, he replied simply, "Yes. Yes, absolutely."

Studies of instances of successful institutionalization indicate that the process often begins with an external event which demonstrates the need for change or action to be taken.[52] For Seattle, this would be the 1999 report indicating that their urban forest was under threat and would likely be decimated within two decades by a combination of the impacts of invasive species, development and the natural life cycle progression of the trees that made up the bulk of the urban forest populations. Under former Mayor Nickels, this sense of external threat was plaited with a growing awareness of both climate change and the need to develop more sustainable policies and practices within city government. "People interpreted it kinda strangely because it didn't really say you have lost 50% of your canopy cover. It said you have lost 50% of the areas that were 50% or more of canopy cover." Recalls Mr. Rundquist, who was Seattle City Arborist at the time of the 1999 report. "So the newspapers took it and, you know, doom and gloom, oh my god, we're going to be living in the Sahara Desert in the next 3 years,

[52] Pasquini, L., & Shearing, C. (2014). Municipalities, politics, and climate change: An example of the process of institutionalizing an environmental agenda within local government. The Journal of Environment & Development, 23(2), 271-296.

when really, it pointed out a significant issue, but it wasn't quite as bad as it was played up to be at the time."

Traditionally the next phase in the institutionalization process involves the adoption of the issue by high-level leadership and a successive buy-in from staff who become dedicated to addressing the problem, which did eventually transpire under former Mayor Nickels' administration. Research into the process of institutionalization at the local level has demonstrated the dominant role the mayor has in the success or failure of any attempt to institutionalize a new policy agenda within city government, and lack of sufficient institutionalization as the most accurate predictor of the failure of new policy agendas[53]. Through the exchange of information and coordination among governmental networks, this trickles down to buy-ins among departments and agencies. In such instances, sources are crucial, as actors are more likely to internalize information and directives from familiar, trusted sources than unfamiliar ones, and norms are more likely to spread amid dense networks where information is regularly exchanged[54]. Eventually a point occurs at which the new ideals and processes become so entrenched within departments, and normative beliefs so internalized among individual actors, that they become resistant to change even under successive regimes. Ultimately it is this metric that inextricably links time and institutionalization, as once there is awareness of the importance of the issue and sufficient upstream support exists to foster its normative adoption by individual agencies, all that remains is sufficient time for the implemented changes to take root and become the 'new normal' within agency practices. When Ms. DiSalvo characterizes consideration for Portland's urban forest as "just becoming more a part of the culture" within outlying City of Portland departments, it would seem to indicate at least partially successful institutionalization of those priorities. Whereas in Seattle, despite

[53] Wahid, Fathful. "Institutional Entrepreneurs: The Driving Force in Institutionalization of Public Systems in Developing Countries." Transforming Government People, Process and Policy 7.1 (2013): 76-92. Web.
[54] Pasquini, L., & Shearing, C. (2014). Municipalities, politics, and climate change: An example of the process of institutionalizing an environmental agenda within local government. The Journal of Environment & Development, 23(2), 271-296.

the presence of an external catalyst, a high degree of interconnectivity, and high-level leadership at least

during the initial stages, only modest successes at internalizing urban forestry goals broadly across city

government seems to have occurred, likely due to the absence of executive-level leadership on the issue

during the last two mayoral terms. "Mayor Nickels was very much an environmental kind of mayor."

Commissioner Kostka recalled. "We've had the [current] Mayor [Ed Murray] come and he says he's all

behind us, that his first year in office that he couldn't really do anything for forests because he had other

priorities, but during his second year, he'd try."

Institutions like individual city departments can either be a means or an impediment to induce

change within a metropolitan environment.[55] Resistance to change among departments is another

element that can be teased out from the differences in the Portland and Seattle models. Any

governmental institution is a constantly evolving process, subject to both incremental and radical

change over time. However, most governmental agencies and institutions are subject to some level of

inertia or resistance to change that needs first to be overcome to make substantive changes to the

norms and processes that govern that institution's methodologies. Most frequently, these changes are

the result of external pressures rather than internal policy innovation[56] which again reinforces the

strong determinant played by the Mayor in the Seattle system. While Seattle's approach involved the

layering of new policies, priorities and commitments atop pre-existing ones across departments and the

co-opting of existing actors, Portland took much more dramatic steps to institutionalize their urban

forestry programs. By creating the position of Urban Forester within their city government and investing

it with agency authority and a specific mandate, they circumvented the problem of attempting to

rechannel an existing agency to fulfill a new objective or the internal conflicts that occur with adding

new policies and duties to agencies and individuals who are already well entrenched in old patterns.

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[55] Lenschow, Andrea, and Anthony R. Zito. "Blurring or Shifting of Policy Frames?: Institutionalization of the Economic-Environmental Policy Linkage in the European Community." Governance 11.4 (1998): 415-41. Web.
[56] Wahid, Fathful. "Institutional Entrepreneurs: The Driving Force in Institutionalization of Public Systems in Developing Countries." Transforming Government People, Process and Policy 7.1 (2013): 76-92. Web.

This avoids the problem of remodeling previously developed structures and instances of prior policy institutionalization being used as an interpretive framework, or in some cases bias, when implementing new policy reform, which can shape the normative outlook of individual actors within the metropolitan environment and assessment of the feasibility of the new agenda[57].

Seattle's approach, while less disruptive and threatening to existing agencies and their mandates, suffers from the reality that to make enduring change within institutions, actors need to be able to not only supplant previous institutional processes and ideals, but successfully embed their own. Legislative or executive implementation of new agency policies which will be layered on top of existing ways of doing things are more common in governance than demands for reformation or radical abolition of existing practices[58]. At the same time, the internal norms, goals, and processes of an agency will tend to heavily influence the ultimate outcome of the establishment of those new policies. Institutionally, the default option is frequently the most well-trod and familiar path. Change within existing agencies tends to be subtle and incremental rather than sudden and sweeping[59] compared to the formation of new institutions which are devoid of preexisting methodologies and mandates, significantly extending the timeframe necessary to fully institutionalize a new mandate or agenda. Consequently, the depth of institutionalization within pre-existing institutions in the process of adopting new policies and mandates will be heavily influenced by the stability and formality of older norms and structures[60]. This can prove a significant impediment to change when there is a high rate of turnover among the executive staff of a municipal government. As we have seen, the only actor in Seattle's more prevalent strong mayor and council system with a sufficient level of sway is likely to be the Mayor, who may find a single term an

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[57] Lenschow, Andrea, and Anthony R. Zito. "Blurring or Shifting of Policy Frames?: Institutionalization of the Economic-Environmental Policy Linkage in the European Community." Governance 11.4 (1998): 415-41. Web.
[58] Moseley, C., & Charnley, S. (2014). Understanding micro-processes of institutionalization: Stewardship contracting and national forest management. Policy Sciences, 47(1), 69-98.
[59] ibid
[60] Lenschow, Andrea, and Anthony R. Zito. "Blurring or Shifting of Policy Frames?: Institutionalization of the Economic-Environmental Policy Linkage in the European Community." Governance 11.4 (1998): 415-41. Web.

insufficient timeframe to build consensus and enact meaningful environmental reform across departments that will endure beyond their administration. Conversely, Portland's blended commission-style governmental structure may dampen the impact of mayoral succession though the inherent diffusion of responsibility. Policy changes are interpreted at many different levels, each one offering a chance for distortion and diffusion, meaning that the ultimate effectiveness of high-level implementation strategies will be strongly influenced by the interpretations of other actors along the administrative chain of command. Even if norms are institutionalized, programmatic elements will not necessarily follow. In many instances, even if successive administrations share normative environmental values with previous administrations, they may find it in their interest to alter priorities and implementation strategies, either to afford preference to a different, more supportive constituency or simply to demonstrate separation from the previous administration[61]. Consequently, staffing continuity within agencies tends to encourage institutionalization, at least after the process has already been set in motion.

At the municipal level, a host of external factors can also play significant roles in determining whether or not new mandates will be successfully internalized into governmental structures. While lacking the concentrated effect of high-level executive oversight, broad-based community support for a program can generate sustained pressure that will motivate actors at all levels to pursue internalization, as well as create greater visibility for resulting outcomes. Of particular importance for the process of internalization are outcomes that will garner recognition on a 'regional, national and international' level[62], and the resulting availability of funding and expertise that tends to flow from such recognition that will make further success more feasible. External pressure from higher levels of government such as performance targets, policy champions, and productive inter-agency cooperation all increase the

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[61] Pasquini, L., & Shearing, C. (2014). Municipalities, politics, and climate change: An example of the process of institutionalizing an environmental agenda within local government. The Journal of Environment & Development, 23(2), 271-296.
[62] ibid

likelihood a policy will be internalized[63] as well. External resources, like local collaborative groups, can be

mobilized to add capacity to an agency attempting to internalize a new policy mandate[64]. Ultimately,

while factors like the presence of champions willing to develop environmental policy innovation, the

potential for the action to generate recognition on a broader stage and garner votes from constituents

invested in the issue, and the availability of funding and expertise for the proposed program is crucial at

early stages, the most compelling predictor of long-term institutionalization within municipal

government is the formalization and integration of the ensuing new practices into the day-to-day work

of departments across the city, as this significantly decreases the potential for policy to be abandoned or

reversed in successive administrations. In this sense, the creation of new positions and departments,

retraining of existing staff, and revisions to existing policies and procedures are, in conjunction with the

time necessary for these innovations to take root, the leading predictors of enduring success with

respect to municipal-level environmental programs[65]. Conversely, instability and frequent change can

significantly hinder the efficacy of such programs, which are often not in place long enough to overcome

institutional inertia. A program that is quickly developed and implemented will progressively become

less and less likely to be supplanted as more resources are invested and the program takes root within

operations of various departments and generates its own institutional inertia to change.

Conclusion

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[63] Moseley, C., & Charnley, S. (2014). Understanding micro-processes of institutionalization: Stewardship contracting and national forest management. Policy Sciences, 47(1), 69-98.
[64] Moseley, C., & Charnley, S. (2014). Understanding micro-processes of institutionalization: Stewardship contracting and national forest management. Policy Sciences, 47(1), 69-98.
[65] Pasquini, L., & Shearing, C. (2014). Municipalities, politics, and climate change: An example of the process of institutionalizing an environmental agenda within local government. The Journal of Environment & Development, 23(2), 271-296.

As the great architect, Frank Lloyd Wright said, "The best friend on earth of man is the tree. When we use the tree respectfully and economically, we have one of the greatest resources on the earth." Though he had not the benefit of the last half century's scientific research documenting the ways in which trees are able to clean our air, resupply and filter our water table, prevent urban flooding, aid in heating and cooling our home, increase our property values and, indeed, our sense of community and well-being in urban environments, the body of his work demonstrates an innate understanding of the ways in which man-made structures can not only coexist seamlessly with their surroundings, but the ways in which one can deeply enrich the other. Viewed through the lens of what we now know, his comments seem almost prescient in their insightfulness – all our human innovation still often struggles to equal the incredible ingenuity of nature. And, like nature, we can see that Seattle and Portland have both evolved out of the systems from which they've sprung.Portland's more centralized and insulated approach, undertaken even before the municipal and scientific communities had embraced urban forestry as a national issue, echoing the way that Oregon, as a state, was one of the earliest to adopt comprehensive zoning and land use policies. In much the same way, Seattle later followed suit and did so in more complex and nuanced fashion to appeal to a multitude of stakeholders, just as Washington followed Oregon with its implementation of zoning regulations. Consequently, Portland's urban forestry program produces more demonstrable benefits, owing to its more rigid structure, insulation from the impact of local government transitions and lengthier timeline, but at the cost of engendering a higher degree of conflict, particularly within other municipal government institutions. Conversely, by adopting a very diffuse structure built on cooperation and normative buy-in rather than strict legislation, Seattle has avoided most instances of interdepartmental conflict, but this cooperative environment and lack of high-level leadership may ultimately mean that they are unable to meet their stated goals.

As both cities share similar developmental histories, have many geographical, demographic and cultural commonalities, and are now both experiencing similar economic and growth-based challenges,

they serve as an excellent natural experiment which allows us to observe the likely impact of a few fundamental differences in policy and approach which inform their overall efficacy. Portland, who began its active stewardship of urban trees several decades previous to Seattle, was better positioned when tools were developed which allowed both cities to gauge the state of their canopy covers with some degree of accuracy at the close of the 20th century. Since that time, Portland has made gradual but steady progress in pursuit of its goals, while Seattle's progress has been uneven and will have to rise sharply in succeeding decades to meet its stated 2037 goal of thirty percent overall canopy cover.

As both cities grapple with significant population growth and pressure to increase density, and the stock of available housing within their cities decreases and becomes more expensive, it seems likely these challenges may become even more significant with time. In confronting these realities, Portland has the benefit of both strong land-use legislation at the state level which has constrained its urban growth boundary, and a strong set of municipal codes relating to trees. Seattle's legislation, in contrast, is more porous on both the state and municipal level. Likewise, both cities grapple with issues of securing sufficient funding for proper maintenance of urban trees.

A critical component of both cities urban forestry programs is the ability of advocates within local government and interested constituents to elevate the issue of urban forestry to a level that it will be addressed by their city legislatures or secure an effective policy advocate. However, this kind of support is necessary not only for the establishment of structures and foundational legislation and fending off concentrated interests, who view it as an impediment to development or an imposition on private property rights, but also for securing funding from city governments that allow the work to be carried out effectively, something with which urban forestry régimes in both cities struggle. The most evident and effective way to secure this necessary support is to make urban forestry a vote getting issue that will be attractive to local politicians, and in both cities we see outreach programs which, in addition to community support and volunteer labor benefits, also serve to build a committed constituency within

each city willing and able to advocate for the cause of urban forestry and convey its benefits to the broader community. Though both cities have incorporated citizen outreach into their urban forestry programs, as oppositional developmental pressures increase, long-term successful strategies may ultimately turn on building a new frame for the issue that expands the perception of urban forestry from simply being an environmental 'luxury good' and casts it more in the role of sustainable urban infrastructure.

Further, my examination illustrates that structures are critical in determining ultimate outcomes. Portland, with its unusual commission model of government that blends legislative, executive, and administrative authority into one hybrid structure, may be able to afford nascent policy initiatives a greater degree of insulation from the vagaries of regime change, something that has proven a significant impediment to Seattle's further development of a comprehensive urban forestry prorgam. Additionally, attempts to rechannel existing government apparatus towards new ends may meet with internal resistance that requires concentrated effort to surmount. Particularly, in Seattle, we can see that a very diffuse network that involves many agencies and offices, sometimes with quite different primary mandates, working cooperatively towards a goal like urban forestry canopy cover, can result in a situation where individual responsibilities are diffuse. This is particularly problematic when there is no one agency or individual tasked with providing high-level leadership on the issue, and ultimate responsibility for meeting stated goals and overall outcomes does not rest with any single party. Conversely, the Portland model illustrates that while concentrated authority and responsibility can produce better overall results, some degree of cooperation, and particularly the availability of input channels from other departments that allow them to air concerns and participate in decision-making processes relevant to their own mandates, is essential to build functional working relationships and stave off the possibility of detrimental inter-agency competition and insulation.

Lastly, we can see that time and sustained involvement from an effective policy champion is essential to the functional development of not just a successful urban forestry program, but likely any new policy initiative. On the agency level, a certain degree of inertia exists from the departmental professionals who will have to internalize these new goals, norms, and day-to-day operational procedures. The availability of information, resources, and expertise to those going through this process is helpful, but ultimately, there is no substitute for the combination of time and the sustained involvement of higher-level authority continuously pushing for these new mandates to be adopted. If this process is interrupted before it is fully rooted, new norms and procedures may be discarded or in some way diminished or warped. Consequently, Portland's sustained interest in urban forestry as an issue has resulted in a substantial degree of institutionalization within departments with primary urban forestry mandates, while in Seattle, the lack of executive interest in the issue of urban forestry in the two successive mayoral administrations following former Mayor Nickels' has potentially limited the degree to which urban forestry has become embedded in the day to day operations of some city agencies.

Tracing the evolution and efficacy of a program over time in two cities as large as Seattle and Portland is a complex undertaking, and indeed, I have only scratched the surface of what could be done. Research on the early evolution of urban forestry in Portland is made complicated by the fact that its inception lies so far in the past, and in both cities the staggering number of people that have been involved in significant roles means that, despite hours and hours of interviews, there remain many more people to whom I would have liked to have spoken who could surely have offered additional instructive insights into urban forestry in these cities. What has emerged from my research, however, is an interesting sketch of how structures influence outcomes, what differentiates a successful program from an unsuccessful one, and the consequences of both concentrated and diffuse implementation strategies. Though the work could certainly be enhanced by the addition of other comparative data

point cities with a high degree of commonality, like Minneapolis, Minnesota, and a more detailed look at

the impact of legislators and legislative support at both state and local levels, the inferences that

emerged from my research were both instructive and surprising.

In future decades, as more and more of people make their homes within large and ever growing

cities, not only will the quality and character of those cities become crucial to health and happiness, but

so will an understanding of the ways in which city governments can manage a city's resources to

produce the best possible outcomes for their citizens. A growing body of research suggests that trees

and urban green spaces have a significant role to play in a multitude of arenas that run the gamut of

health and safety to economic security and personal well-being. As Mr. Rundquist says, "The benefits

are there", but as we have seen, as a quality of life issue with broad but diffuse public benefit, urban

forestry faces challenges in local governmental systems in securing space on legislative agendas as a

matter of priority, fending off those with a concentrated economic interest in subverting urban forestry

regulations, and becoming successfully woven into the fabric of a city's governmental systems.

Successes and failures may turn on the ability of experts and policy champions to successfully convey

the full scope and importance of its benefits to the broader population and, through the expansion of

neighborhood and volunteer-based outreach efforts, to marshal an interested body of citizen

constituents who can successfully advocate for urban forestry as an issue. As more come to be invested

in urban environments, and as municipal government is the level of governance that is the most

intimate and directly interactive with its citizens, it seems both likely and natural that securing the best

quality of life possible will increasingly become an issue of central importance. Though often ignored or

appreciated merely for their aesthetic qualities, emerging research indicates that our ability to thrive

and flourish in increasingly urban surroundings is rooted in our capacity to develop in concert with trees,

instead of in opposition to them. On its face, it seems an obvious lesson, one explored in the most

famous children's book of all time, Dr. Seuss' 'The Lorax', which champions the preservation and

importance of the oft-overlooked tree. As in that beloved book, our success and satisfaction may

ultimately turn on the ability of citizens to recognize the true importance of trees in their lives. For as Dr.

Seuss reminds those with a vested interest in the preservation of trees, "Unless someone like you cares

a whole awful lot, nothing is going to get better. It's not."

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