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Reclaiming Albany's Arboreal Abundance

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by

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I would like to dedicate this work to my mother, Dori Borden. We have always been a team, the two of us, so I see this as a victory for us both. You have supported me in every way possible: you have been a mother, a mentor, and a friend. For that, I am endlessly grateful. You gave up your college degree so you could invest yourself in my life with your arms wide open, so it is only right that I should dedicate my degree to you. It is because of you that I believe positive change is possible, and it is because of you that I feel capable of making it happen. I hope this work reflects that. Thank you for my life and for being in it. I love you very much, momma.

I would also like to dedicate this to Billie Johnston, and Lesbia (Abby) Cortez-- I like to think that your legacy lives on through me, I hope you would agree. RIP, I love you.

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Introduction

This summer, I look forward to interning with The Radix Ecological Sustainability Center. The Radix Center is an environmental justice nonprofit organization based in South Albany, New York. It is an urban farm as well as teaching center whose mission is to "promote ecological literacy and environmental stewardship through educational programs based around demonstrations of sustainable technologies". Through their work they hope to simultaneously tackle issues of food security and health as well as to restore native ecosystems and contaminated land, air, and water, particularly in Albany's South End neighborhood.

In large part, this project has been a learning experience for me to try and really grasp what that mission might entail. I started in the environmental conservation space because I have always known that there was something to the environment that is meaningful to me, and that was the most readily available avenue. Most of my college career has been trying to chip away at the pieces of that environmentalism that felt off. I quickly realized that this work is not about wilderness, it is about people. In the last couple of years, I have realized that cultivation: cultivation of food, of biodiversity, and of relationships is what is meaningful to me. But I still have a lot to learn about how to operationalize that.

Through the Radix Center I was introduced to the idea of Urban Food Forestry and its potential for abundance, sustainability, and justice. This paper is my exploration of that topic, and how it might fit into Albany's context, with a particular focus on the South End. During the project, it just so happened that things seemed to align at the federal, state, and local levels for meaningful engagement with urban forestry in Albany, so exploring that alignment is a big part of this paper.

Urban Forestry and Environmental Justice: Looking beyond Distribution

Last December (2020), Albany, New York was awarded a grant of $75,000 by the Department of Conservation to perform a tree inventory (NYS DEC, 2020). This April (2021) they hired the Davey Tree Expert Company to perform this inventory; this consists of mapping Albany's forest and assessing the distribution of species, their size, and their overall health. The point of this is to have a better understanding of the future management needs (City of Albany, New York, 2021). The city called for the inventory, not just for formulating a management plan, but also for "making clear the value to be found in protecting and enhancing the city forest resources". This is a common tactic that has been used by municipalities in the last couple decades to increase funding to manage their forests. The values that the city emphasizes are trees' ability to improve air quality, remediate the urban heat island effect, reduce noise, manage stormwater, increase property values, and to add aesthetic beauty. Once the inventory is completed (expected August, 2021), the Davey group is also in charge of developing a Community Forest Management Plan (CFMP). This plan, also called the "Planting Plan", is supposed to formulate a vision for the long-term increase and maintenance of the city's forest in order to offset its recent decline. Like many other cities around the nation, Albany is in the process of cutting down all its ash trees due to the losing battle against the invasive Emerald Ash Borer (Fries, 2019). Even with the explosion of tree planting programs in the last couple of decades, the Emerald Ash Borer, Dutch Elm Disease, encroaching development, and urban stresses have caused a steady decline in urban forest cover nationwide (National Urban and Community Forestry Advisory Council, 2015). The Albany Planting Plan is reportedly intended to respond to local needs and environmental justice concerns (City of Albany, New York, 2021).

In an article on the Davey Tree Expert Group's website about their approach to planning CFMPs with environmental justice in mind, they detail how wealthy areas with larger tax bases often have more trees because they can provide forestry departments with more funding (Davey Tree Expert Company, n.d.). To address this, they want to plant more trees in economically disadvantaged areas. Next to funding, they say that community support is the most important component of a successful tree planting program. At the bare minimum, this requires informing people when trees will be planted in their neighborhood, but ideally tree planters should work to build trust months in advance by connecting with community leaders and holding outreach events. They promote taking community opinion into account on tree species as a means of developing trust so that the project can move forward smoothly. Lastly, they aim to follow up to hear community concerns as the planting goes on so that they can keep trust intact and not slow the planting down (Davey Tree Expert Company, n.d.).

While it is good that the city is trying to maximize tree cover to benefit people's well-being and the city's functioning, and that they are considering environmental justice in the process, some of the underlying assumptions—looked at in light of how they fit into national and historic trends— raise concerns about whose vision will truly guide the development of Albany's forest for at least the next decade, and whether it will ultimately improve or will exacerbate overall equity. I hope that unpacking these assumptions will reveal opportunities to advance more broad environmental justice goals and to perhaps allow for a richer and more equitable vision for the city, its people, and its forest.

Urban Forestry Coordination

Throughout the 1980s President Ronald Reagan pushed an agenda of austerity (Rabrenovic, 1996). He defunded public programs and social services to facilitate market-based solutions by private investment instead, aka replace public services with for-profit interests. This put stress on municipalities and made them need to compete with each other to attract private investment and keep their cities afloat, causing a host of environmental and social issues, many of which persist to this day. During his tenure as California's governor when asked about preserving the state's Redwood Forests, he famously said, "A tree is a tree. How many more do you need to look at?" (Jonnes, 2017). So, it is no surprise that he attempted to cut the Department of Agriculture's National Urban Forestry Program. Luckily for the program, a bureaucratic ally was able to save it from the chopping block, but the program was unfunded and neutered— according to that same employee, administrators could not even advertise about the program. Scientists and advocates started organizing around the idea of promoting trees not just as pleasant ornaments to a city's backdrop, but as crucial city infrastructure that could supplement existing grey infrastructure for less cost (Jonnes, 2017).

For the next decade, scientists partnered up with a couple of cities, namely Chicago, and got to work collecting data in order to create algorithms that could estimate the impact of any given tree to a city's functioning (Jonnes, 2017). This was a very work-intensive process (as in counting and measuring the individual leaves on thousands of trees, as one measure of many, kind of process), but by the end of the decade their research was starting to come to fruition to allow them to quantify tree benefits. This was a game changer for urban forestry, as it put it on

the agenda in a real and serious way for the first time (Jonnes, 2017; National Urban and Community Forestry Advisory Council, 2015).

As this research came to a head, a coalition of mayors seized on the premise and decided to work together to create a collective tree planting program, soon after, they received support from an unlikely ally which gave them a boost of synergy (Jonnes, 2017). In 1989 GHW Bush announced the "America the Beautiful" greening program as well as the "Trees are the Answer" urban reforestation program. Demonstrating the bipartisan feelings about climate change at the time, he even promoted the program for its potential to slow global warming. The next year urban forestry was included in the illustrious Farm Bill and was allocated $21 million, rising to $24 million the year after (Jonnes, 2017). With the new data that now showed conclusive evidence of the potential of trees as a "value-adding magnet for economic development", urban forestry advocates began working with housing, energy, water, and air focused organizations on common goals (Jonnes, 2017; National Urban and Community Forestry Advisory Council, 2015).

In 1995 New York City started work on a city tree inventory, and in 2007 had the first ever truly comprehensive "Municipal Forest Resource Analysis", the results of this analysis prompted Mayor Bloomberg to increase the forestry budget from $8 million to $31 million (Campbell, 2011; Jonnes, 2017). This analysis, along with the boost in funding, served as the basis for their Million Trees NYC program which aimed to plant one million trees in the city by 2020. The program was a huge success and even finished two years ahead of schedule. This success can be attributed to their data-driven planning approach; the network of support they created to facilitate the program that included at least 70 city agencies, private donors, non-profits, and volunteers; as well as a diversity of funding sources that included private donations

as well as novel municipal funding mechanisms. One mechanism stressed the importance of changing city ordinances and zoning to accomplish greening goals, such as making developers install green infrastructure with new developments, for example. To the city administration, "such was the power of ordinance to remake a city at no cost to taxpayers" (Jonnes, 2017).

For the rest of the 2000s urban forestry research continued to proliferate, and so did municipal tree planting programs, with each city seemingly trying to do a bigger and better program than the last (Jonnes, 2017; National Urban and Community Forestry Advisory Council, 2015). Los Angeles decided to go for the million-tree goal as well, and even wanted to plant citrus trees for low-income communities, however this program did not achieve the same success as New York (Jonnes, 2017; Pincetl et al., 2012). Reasons for this included the lack of a clear and lasting funding mechanism, little community engagement or programmatic support beyond tree planting, as well as the assumption that planting a million trees would necessarily be a good thing in an arid and naturally unforested climate (Pincetl et al., 2012). One thing that came of the program, however, came from the initial mapping. This mapping showed stark disparities in tree distribution between different parts of the city that coincided with boundaries of race and class. For example, the Bel Air neighborhood had a canopy cover of 53%, while the South Central neighborhood had 7% (McPherson et al., 2011). This realization was one of the sparks for the next frontier of urban forestry, a paradigm that promoted urban tree planting as a way to combat environmental injustice (Jonnes, 2017; National Urban and Community Forestry Advisory Council, 2015).

A multitude of studies looking at urban canopy cover distribution have been done in municipalities around the country (and the world); many, but not all the studies, suggest that urban trees are less distributed near black and Hispanic communities (Riley & Gardiner, 2020).

When this is the case the tree distributions often follow contours of HOLC redlining maps. More consistently than with race, less tree distribution is associated with lower income and wealth (Watkins & Gerrish, 2018; Riley & Gardiner, 2020). Tree planting programs began adding the element of environmental justice into their plans, justifying it on the basis that not only did low-income communities and communities of color have disproportionate exposure to environmental hazards, but they also had disproportionate access to amenities, such as city trees (National Urban and Community Forestry Advisory Council, 2015). Environmental justice became another support for forestry plans to lean on in promoting the importance of their mandates to increase urban forest cover.

Federal legislation requires that a Ten-Year Urban Forestry Plan be completed to guide and coordinate urban forestry efforts from across the country (National Urban and Community Forestry Advisory Council, 2015). In 2014 a group of urban forestry leaders and stakeholders convened to create a national urban forestry plan that would span from 2016 to 2026. The plan was put together by a "team of facilitators, researchers, and economists" (National Urban and Community Forestry Advisory Council, 2015). Interviews of 26 'thought-leaders' revealed key issues to be addressed by the plan based on research such as research on climate change, social justice, and economics/funding. In 2015 these key issues were "vetted and prioritized by community engagement to inform the draft". The key issues included:

1) Building human health and welfare through urban and community forestry
2) Expanding utilization of technology
3) Enhancing collaboration and communication in the field: build on existing work and partnerships
4) Making urban forestry a central element of community planning at the regional scale
5) Increasing urban forest health, biodiversity, and resilience
6) Expanding and targeting urban and community forestry research
7) Building effective leadership to champion urban and community forestry
8) Increasing funding for urban and community forestry
9) Expanding public awareness, education, and environmental literacy

10) Improving urban and community forestry management and maintenance
11) Enhancing stewardship of both trees and their urban and community forests
12) Building professionalism and broader access to the field
13) Increasing diversity for social justice and inclusivity
14) Fostering federal agency collaboration and program improvement
(National Urban and Community Forestry Advisory Council, 2015).

According to the report, "…since 2005, urban and community forestry has grown from an infant profession that often needed to justify its place at the table to a young adult that is often, but still not always, invited to the community planning table— though many thought leaders noted that UCF should have a seat at the head of the table" (National Urban and Community Forestry Advisory Council, 2015). They attributed this success to the increased utilization of technology and data in the last decade for assessing the value of urban forests. The next goal was to promote urban trees so that they can be seen as a core feature of infrastructure planning and city functioning, and to even find ways to make urban and community forestry be prioritized over development. This included advancing "the use of urban forestry as a core go-to solution for community problems, of equal importance to housing and transportation" (National Urban and Community Forestry Advisory Council, 2015).

The new paradigm shifts that were taking place included a change from focusing on tree selection and just planting trees, to a focus on developing "highly functioning, connected urban forests and functional, interconnected ecosystems" and maintaining current forests (National Urban and Community Forestry Advisory Council, 2015). The primary concern expressed throughout the document was the need to stop net loss of forest cover— all the other recommendations and key issues fed into this goal. Many of the thought leaders suggested that "considering the potential benefits of trees, especially around psycho-social and health benefits, will catapult the field ahead in the coming decade", which would be a better way to reach the public and policy makers rather than just focusing on ecology and infrastructure-based

ecosystem services (National Urban and Community Forestry Advisory Council, 2015). Still of great importance was the need to secure funding at all levels, particularly for maintenance of trees. They hoped that by educating and bringing awareness to the public and policy makers about the ever-increasing importance of trees they could secure more funding for upcoming forestry initiatives.

While not a part of the 12 key issues, the report did include themes and some discussion around connecting with underserved communities and those involved in environmental justice and food justice advocacy to promote urban forestry. They established the explicit goal of creating action plans based on "effective and authentic community engagement"; the barriers to this in the past twenty years according to the report was that the urban forestry profession was "not diverse and has not developed a high comfort level or experience in working with low-income or multi-cultural communities of color", and so had not yet developed networks of trust (National Urban and Community Forestry Advisory Council, 2015). The report emphasized the need to not go in with preconceived plans, but to instead listen to stakeholders and incorporate their feedback to address their self-professed needs. The paper included the example of how "an attempt to offer shade trees to an undeserved neighborhood fell flat, until they decided to offer fruit trees, which caused a rush on the supply of fruit trees", this was then an entry point to promote shade trees and general canopy increase (National Urban and Community Forestry Advisory Council, 2015). Apparently, giving away fruit trees has been a highly effective way to garner public interest and support in urban forestry, and has helped launch several forestry initiatives, such as in Pittsburgh and Los Angeles.

Like how, as the report described, cities treat trees as additions to planning instead of as a central component, this report seemed to treat environmental justice as a means to create

additional public support and increase tree cover, but this was an afterthought rather than a central component. They described the need to engage with and listen to communities without preconceived goals, yet the overall purpose of community engagement was to advance their agenda to increase public support for urban forestry so that it will be easier to fund the maintenance and growth of urban forests. For example, they promoted free fruit trees because it seemed to be a meaningful avenue to promote interest and awareness of community forests, but still promoted this simply as an entry point to supporting their overall goals mentioned above, rather than investigating why fruit trees might be a meaningful connection point with communities and how the program could be molded by those values.

They come from the point of view that certain economically disadvantaged communities are not very moved by the premise of increasing urban forests primarily due to a lack of awareness or education about the benefits of trees. However, the environmental justice literature suggests otherwise. Assumptions about trees as being universally beneficial and desired has caused some tree planting programs to falter in reaching this goal, and even exacerbate inequities (Carmichael & McDonough, 2018). In 2011, riding the wave of increased interest in tree-planting, Detroit attempted to initiate a tree planting program of its own (Carmichael & McDonough, 2018). To their surprise, they received a significant amount of pushback from some nearly a quarter of the residents they reached out to, many of whom made explicit requests for the city to not plant additional trees in their neighborhood (Carmichael & McDonough, 2018). This upset the assumption that trees are an indisputable amenity with universal support, which befuddled the municipality.

A team of researchers conducted an ethnographic study to determine the cause of this rift. Multiple interviewees, all of whom were black, reported that many of them were hesitant to

allow tree plantings, even if they reported personally liked trees, because they did not want to deal with the extra maintenance that they felt the trees would require, considering how little maintenance support the city gave for their current trees, sidewalks, and other infrastructure (Carmichael & McDonough, 2018). Additionally, some residents reported feeling distrustful of this program because of the city's previous inexplicable removal of all their trees in the 1960s. They attributed this to a government desire to increase surveillance abilities, facilitate policing, and to reduce future maintenance costs of the trees. This history caused them to feel weary about the city suddenly coming in to do the opposite. Even though the city seemed to be correcting a past injustice, the opposite action had the same reaction because both actions diminished people's sense of agency and did not take into account past events and historic traumas that influenced the uneven tree distribution and people's feelings about it (Carmichael & McDonough, 2018).

Similar results were found in Baltimore. Of 26 people surveyed, only 14 had positive feelings towards a tree planting program (Battaglia, et. al., 2014). Concerns ranged from complaints about pests and nuisance wildlife associated with trees, pollen allergies, and property damage, to concerns about trees that were already dead, and gentrification. Residents also expressed skepticism about the program because past politicians tried to initiate similar, but failed, programs to use it as an 'election card', and they also felt like other issues were more pressing, such as trash collection. Some urban communities have valid reasons to "fear the forest", as unfocused tree planting programs that fail to properly address potential disservices of trees or those that only focus on distributional justice, rather than procedural justice, may be ineffective or even harmful (Battaglia, et.al., 2014).

It is not enough to simply increase tree distribution to address environmental injustice, because it is like treating a symptom without addressing the underlying condition. The urban landscape is a function of historical patterns shaped by the forces of political and economic regimes, which have caused a multitude of injustices for certain communities based on constructs such as racism, classism, sexism, ableism, etc. (Kitchen, 2012). Forest cover is but one of many services and amenities denied to marginalized communities, and so to bring about environmental justice we cannot only do it by simply increasing trees.

Notably, the 2016-2026 report recommended marketing urban forests as "habitat for urban citizens" (National Urban and Community Forestry Advisory Council, 2015). It suggested a narrative about how habitat restoration allowed for the bald eagle to rebound, so we should "focus on the effects of the destruction or loss of function of our human habitat—urban forests— and how to take action to halt its destruction" (National Urban and Community Forestry Advisory Council, 2015). This metaphor betrays the forestry-minded (rather than ecologically, or socially minded) biases of the report's authors.

A habitat's ability to support life is not just based on its trees and/or infrastructure, it is based on its ability to meet life-supporting needs, such as supplying nutritious and appropriate food, ample shelter, clean air and water, and networks of inclusive relationships that allow for the forest's inhabitants to live secure, full, and healthy lives. While trees might be able to assist with some of these things, if foresters really want people to regard the forest as habitat, they should try to see how the forest can be used to meet, or at least not further compromise, those immediate needs. I also find it ironic that the goal is to manage urban forests as "functional and interconnected ecosystems", yet the dominant parts of this 'ecosystem' are sterile trees that cannot reproduce on their own or provide much sustenance to people or wildlife.

In Portland, Oregon's 2018 tree planting strategy: Growing a more equitable urban forest, the authors describe their attempts to address their city's inequitable forest cover-- one of the most unevenly distributed urban forests in the country. In the report they emphasize taking time to build trust and ongoing relationships, actively listening, and trying to work collaboratively to make the forest fit the needs of their underserved communities. During this process they revealed that,

> Interestingly, a lack of understanding around the symbolism of trees and how they are perceived by different cultures was identified as a common thread in government-resident relations. City officials learned that value is relative, and that the constantly asserted ecosystem services pitch doesn't resonate with everyone…. A mismatch exists between professional framing of the importance of trees and community interests….A one-size-fits-all tree planting mentality will not work to meet the needs of various communities….For example, when asked what benefits trees provide, participants commonly cited food, medicine, wood, and shade. Many of the most common benefits that municipalities often promote – like carbon sequestration and stormwater management – didn't even make the list (Portland Parks and Recreation, 2018).

Since the field of urban forestry is pretty coordinated, I will spend the rest of this next chapter trying to tease out how this mismatch came about in the field, and how this has played out in Albany's context at a macro level. During this process I also interviewed a handful of Albany residents to try and get a peek at the ground-level of how this is playing out in the current moment. In the last chapter, I incorporated themes from these conversations into my broader ideas on Urban Food Forestry through the frame of Nature-Based Thinking, as an alternative to the prevailing urban forestry paradigm of Nature-Based Solutions. The hope is that this will be an interesting place to spark conversations from as Albany's Community Forest Management Plan approaches.

Whose Forest?

Environmentally minded policies tend to be targeted at restoring, returning to, or working with nature. This begs the question of what defines 'nature', or what is 'natural'? Western thought generally conceives of nature as an overriding and in some senses divine force, one that we have relationships with, but are separate from. In this paradigm, nature in its purest and most virtuous form is wilderness— the destined state of the living world as created by natural forces in the absence of human influence. However, this line of thinking is as natural, or perhaps I should say as universally true, as any other social construct— as in, it is not. Like psychology, culture, or economics, nature is dynamic, complex, networked, and impossible to define in an all-encompassing manner. And in fact, disciplines like psychology, cultural studies, economics, and environmental studies are simply different ways to try and understand the same thing: our dynamic, complex, and interconnected world that we exist within and depend upon. In an ever-changing world, whose systems as we have known them are being stretched to their limits by the out-sized influence of a small portion of the human population, the natural world, and our relationship with it is at the forefront of public consciousness.

My degree program of Environmental and Urban Studies is emblematic of the recently shifting popular conception of the environment, not as something diametrically opposed to human influence, but as an all-encompassing set of relationships in which humans are as deeply entangled as any tree, bird, or bee. One does not need to go to the countryside or to a national park to experience nature, because it is around us all the time; our cities are just as much a part of the environment as any wild place. This line of thinking, while a development from the previous popular paradigm, is not entirely new, but is instead a part of the worldview held common to

many cultures, past and present, who center values of reciprocity with the living world. To understand the human values that have shaped Albany over time, we need to start from the beginning.

Albany, like most other major cities in the United States, sprung up where it did because it was a societal hub prior to colonization due to its rich natural resources and opportune location for travel and communication. Most urban forests in Europe can be characterized as "post-development urban forests" (McBride & Jacobs, 1986). This is because their forests do not consist of many of the species or features of the forests that existed prior to extensive development. Meanwhile, urban forests in the United States and in Canada are largely transitional forests that are a fusion of pre-colonial/pre-development forest characteristics and imported characteristics. According to McBride & Jacobs "An understanding of the structure of the presettlement forest and the factors influencing the change into a post-development urban forest, is necessary to be able to manage the transitional urban forest and to predict the future characteristics of post-development urban forests". Essentially, it is important to understand what pre-colonial forests were like, and what (who) shaped them in order to effectively manage the current forest in order to meet its optimal future development. This is not just about what species shaped and may continue to shape our urban forests, but what and whose values shaped and may continue to shape them.

Albany's Natural History and First Peoples

As of about 20,000 years ago nearly all of what is now New York State was covered by massive ice sheets that blanketed much of the North American continent during the last Ice Age (Albany Pine Bush Preserve Commission, n.d.). The ice that was over present-day Albany was estimated to be around one mile thick. As glaciers moved and shifted over time, they pushed surface rocks and sediment along creating mounds called glacial moraines. The climate warmed and the ice melted, leaving these moraines blocking the meltwater's flow which caused water to pool in what was Glacial Lake Albany; this lake encompassed much of the Hudson River's north to south range. For many years, rivers flowed into Glacial Lake Albany depositing sand, rocks, and sediment along the lake's bottom. The primary source of this was the Mohawk River which today is still the largest tributary of the Hudson River. The lake eventually drained, but these sandy deposits remained. Wind and sand resulted in an undulating landscape dominated by sand dunes. Eventually, ecological succession started by grasses and herbs stabilized these dunes and matured into what would later be known as the Albany Pine Bush, or the Albany Pine Barrens— so named because of the relatively low fertility of its sandy soils and the dominance of the pitch pine ecosystem. The Albany Pine Barrens are one of the largest inland pine barren ecosystems in the world; they now encompass approximately 6,000 acres, but prior to European colonization encompassed around 25,000 acres. Over time water runoff carved through parts of the land creating streams and rivers that became the centerpieces of their own kinds of communities within the larger ecosystem (Albany Pine Bush Preserve Commission, n.d.).

From their first arrival in the post-glacial lands of the North American continent, indigenous peoples were instrumental in shaping its ecology. This was a highly dynamic process;

as the glaciers retreated, plants, animals, and people moved in where they intermingled and created unique communities (Abrams & Nowacki, 2008). At first, climate facilitated the shift from boreal coniferous forest to temperate forests dominated by deciduous trees. Later, as happened all over the world, people took over for climate as the most significant factor in shaping the ecosystems around them. Their tools and techniques for doing so have been long ignored, contested, or downplayed by historians and ecologists alike, largely due to European preconceptions held about Indigenous peoples. Both the idea of the 'irresponsible incendiary' and the romantic idea of the 'noble savage' lend to misunderstandings about indigenous agro-ecological techniques. These sentiments lie at opposite ends of the spectrum of mythical ideas about Indigenous Peoples of the Americas, yet both served the same purpose of justifying the removal of Indigenous Peoples from their lands. One technique that is perhaps the most misunderstood and left out of the picture is prescribed fire: the purposeful and rejuvenating ignition of forests and fields. Traveling over the Bering Land Bridge between Russia and Alaska, the first peoples of the American continent had to be intimately familiar with fire for survival in their subarctic environment. As they traveled across modern-day Canada and the United States, they developed methods for using fire as a land-management tool to shape the environment beyond what would happen from just the 'normal' dry weather fire season (Abrams & Nowacki, 1983). Contrary to our Smokey the Bear intuitions, this was not a force of destruction, but one of disturbance that maximizes biodiversity and the abundance of food. These practices were not universal to all Indigenous Peoples of the Americas, nor were they practiced the same way, but they do play a big part in the story of Albany's ecology thanks to its original human inhabitants.

Indigenous Americans have lived along the Hudson River and its tributaries for at least 9,000-13,000 years— since the retreat of the glaciers of the last Ice Age (Bradley, 2007). The

land that makes up present day Albany is part of the ancestral homelands of two main indigenous groups: The Muhhekunneuw and the Kanienkehaka. Muhhekunneuw translates to "the Peoples of the Waters that are Never Still" (Bruegl, 2021). This name is derived from the river their lives centered around: the Mahicannituck (The Muhhekunneuw name for the Hudson River) translated as "the River that Flows Both Ways" due to its tidal behavior. They were often referred to as River Indians because they were the dominant group settled along the Mahicannituck, and it played a big role in their ways of life. They occupied territories that ranged from presently known Lake Champlain to Manhattan on both sides of the Mahicannituck, as well as parts of Vermont, Massachusetts, and Connecticut (Bruegl, 2021; Bradley, 2007). They were closely aligned with their Lenni Lenape and Delaware kin who lived downriver from them (Bruegl, 2021). Together they make up a few branches of the Algonquian Peoples— people who speak an Algonquian language. They are also called Mohicans, which is the name the Dutch gave them based on misunderstandings on how to say Muhhekunneuw; today they are a part of the Stockbridge-Munsee Band of Mohicans. Out of respect, I will try to call them by their chosen name, however I will use their other names where appropriate.

Before European contact, their numbers in the Hudson River estuary were estimated to be around 25,000 and had around 50 settlements in the Capitol Region alone (Bruegl, 2021). They referred to the place that Albany rests on as Pempotowwuthut-Muhhcanneuw, which translates to "the Fireplace of the Muhhekunneuw". This area was the seat of government, called a council fire. Their main settlements in this area were on what is now called Peeble's Island as well as the shores near it at the confluence of the Mohawk and Hudson Rivers, as well as just South of Albany in present-day Castleton (Bruegl, 2021).

The Muhhekunneuw tended to travel seasonally and likely returned to sites that were favored through generations (Bradley, 2007). In the spring, after the snow and ice melt, Muhhekunneuw migrated from their upland wintering locations back to their settlements along the Mahicannituck and its tributaries to fish the migrations of spawning Alewives, shad, and sturgeon; gather wild plants; and plant crops. This foraging, fishing, hunting, and cultivation continued through the summer until the fall when efforts were aimed at preserving provisions for the coming colder months. Crops were harvested, last fish were caught and preserved, and foods were processed to stay good through the winter (Bradley, 2007). In the winter, the Muhhekunneuw migrated to more sheltered inland areas where they supplemented their provisions with various animal game and what tree nuts might still be available (Bradley, 2007). Where they settled, they lived in multi-family longhouses as well as circular homes called wik-wams that were from bent saplings draped with tree bark and animal hides (Bruegl, 2021). In a document published by the Stockbridge-Munsee Historical Committee this life is described:

> The Mohicans' lives were rooted in the woodlands in which they lived. These were covered with red spruce, elm, pine, oak, birch, and maple trees. Black bear, deer, moose, beaver, otter, bobcat, mink, and other animals thrived in the woods, as well as wild turkeys and pheasants. The sparkling rivers teemed with herring, shad, trout, and other fish. Oyster beds were found beneath the river's overhanging banks for some distance up the Mahicannituck. Berries, cherries, and nuts were abundant. It was a rich life (Davids, 2001).

The Kanienkehaka are one of the original five nations that make up the Haudenosaunee Confederacy (who are now composed of six nations) (Saint Regis Mohawk Tribe, n.d.). Kanienkehaka translates to "the People of the Flint". Their English name is Mohawk, although this is based on a derogatory term that the French learned from the Muhhekunneuw; the same is true for the Haudenosaunee who are called Iroquois by English speakers. Once again, I will try to call them by their chosen names but will use their English names where appropriate. They occupied territories that range from present-day Eastern New York stretching to Southern

Vermont and Southern Canada; they were known colloquially as "the Keepers of the Eastern Door", as they defended the rest of the Western Haudenosaunee groups from Eastern invasions. This position later granted them power and influence relative to the rest of the Haudenosaunee because of their proximity to the trading posts of Albany and Montreal (Saint Regis Mohawk Tribe, n.d.). By the start of European colonization their main places of habitation in the Albany area included three villages around the Mohawk River, west of present-day Schenectady (Bradley, 2007). Their pre-European population was estimated to be around 8,000 strong. They referred to the place that Albany rests on as Scheneghtada, which translates to "through the pine woods", and is where the town of Schenectady gets its name (Schlimmer, 2019). They lived in larger and more sedentary settlements than the Muhhekunneuw and relied on cultivated crops and hunting to a slightly larger degree, probably due to the less fish-rich Mohawk River (Bradley, 2007).

Agroforestry Practices

Both groups practiced variations of what we might term "sequential agroforestry" as well as "simultaneous agroforestry" (Davies, 1996). Sequential agroforestry, also called shifting cultivation, occurred mostly on the low-lying, level, and nutrient-rich floodplain soils surrounding rivers where they would employ various intercropping systems. One example is the "three sisters" system where corn, squash, and beans were planted together for their synergistic relationships (Davies, 1996). Beans stabilize the soil and are nitrogen fixers that take nitrogen from the air and put it in the soil where it can be accessed by other plants, squash leaves shade the soil to help it retain moisture and to prevent weeds, and corn provides a stalk for beans to climb so they do not get out-competed by the squash (Kruse-Peeples, 2016). This triad of plants

also had well-rounded nutritional value as together they provided protein, carbs, and vitamins and minerals. This intercropping group was initially developed in Mesoamerica where trade routes brought the involved seeds and knowledge to bear on many Indigenous American cultures. In the Northeast, these crops were on raised earthen mounds that helped their roots drain in the wet Northeastern climate, and sometimes rotten fish and eels were buried with the seeds to improve soil fertility (Kruse-Peeples, 2016).

With sequential agroforestry, after roughly 5-10 years of cultivation, fields that were previously cultivated would be left fallow for up to 10-20 years (Davies, 1996). The fields would often be burned which would prompt sprouting of berries including strawberries, raspberries, and blackberries as well as other small shrubs and trees. One important example is Pin Cherries which are the only cherry species that is native to the Capitol Region (Schlimmer, 2019). They are nicknamed 'fire cherries' because they are a pioneer or leader species that is one of the first to establish in a recently disturbed landscape (Schlimmer, 2019). Other trees that would be the first to grow in these disturbed areas might include birches and white pine (Davies, 1996). Later tree arrivals might include maples, beeches, and hemlocks. The name used for these newly disturbed alluvial areas translated to "place of the little pines". The young pines increased soil fertility through rhizome action and provided cover to encourage animals, like ruffed grouse. Eventually this cycle would be continued: whereby indigenous occupants would burn the forest floor of grass and shrubs, girdle the trees with fire or tools to kill them, and then plant corn among the dead trees until they were later felled or burned to bring their nutrients back into the soil (Davies, 1996).

Simultaneous agroforestry mainly took place on the upland glacial soils (Davies, 1996). Here both groups developed land care practices that fostered the growth of perennials including

berry bushes and nut trees as well as wood prized for fuel and building/crafting materials. Fire was also a key tool for this form of agroforestry. Fire was used to clear underbrush and thin forests of less productive tree species; this resulted in open airy forests, and in many cases orchards or groves of fruit and nut trees. Thin-barked species such as Maples, Birch, Beech, and Hemlock would burn, leaving more room for thick-barked and fire-tolerant species such as Pitch Pine, Oak, Shagbark Hickory, and American Chestnut (Davies, 1996). In addition to having thick bark, White Oak and Chestnut are able to compartmentalize diseases that might result from basal scars left by fire; scrub oak also has large root systems that support new growth even days after a fire (Albany Pine Bush Protection Commission, n.d.). Additionally, many nut trees are famous for easily re-sprouting from stumps, and partially girdled fruit trees "block downward translocation of carbohydrates" to its trunk, resulting in heavier fruiting (Abrams & Nowacki, 1983).

Clearing undergrowth and drying the soil also helped to control pests, diseases, and weeds, made it easier to walk quietly when hunting game, and facilitated larger populations of the wild game that they depended on (Abrams & Nowacki, 1983; Davies, 1996). The Albany Pine Bush Preserve Commission (n.d.) estimates that any given spot in the pine barrens was burned every ten years on average, with most of the fires occurring during the spring. Much of this area was burned for simultaneous agroforestry and was a sort of commons and neutral ground between the Mahhekunew and the Kanienkehaka of Albany (Bradley, 2007; Davies, 1996).

Next to humans, beavers are known for being the living being most able to alter its surroundings (Facts About Beavers in the Adirondacks, 2020). Wherever beavers live, they cut down trees, dam rivers and streams, and dig canals. Beavers are the only animals besides humans

that can cut down mature trees and it is estimated that within 300 feet of their pond, the average beaver family is able to cut a metric ton of wood annually. This creates open woodland areas and extensive wetlands due to their dams. This completely alters the ecology of a place, so much so that ecologists call them "ecosystem engineers". The largest beaver dam in the world is in Canada and can be seen from space (Facts About Beavers in the Adirondacks, 2020).

When a stream is dammed, it creates a slow-moving pool of water, called an impoundment. Impoundments allow the colonization of plants and animals that would normally live-in lakes. Beavers also thin forests of their favorite species of trees which include Alder, Aspen, Apple, Birch, Cherry, Cottonwood, Maple, Poplar and Willow, thus changing not just the number of trees in an area, but also the distribution (Facts About Beavers in the Adirondacks, 2020). For example, they typically avoid cutting Ash trees and so within the first 30-50 feet from a river where beavers live, dense stands of ash will often be found. The corner of Ash Grove Place and Grand Street in present day Albany marks where an ash grove grew before it was cut down for development (Schlimmer, 2019). When a beaver dam is abandoned and breaks apart, it usually leaves a meadow with extraordinarily rich soil thanks to the sediment and organic nutrients settled at the bottom of the impoundment. The impacts on wildlife are extensive: beavers provide a food source that supports predators— including people—, their impoundments and dams create nurseries for fish, and the habitat they create encourages greater bird diversity (Facts About Beavers in the Adirondacks, 2020). In tandem with people, beavers were instrumental in shaping the environment of the Capitol Region prior to European colonization.

Trees in Cosmology and Culture

Trees feature largely in the cultures of the Algonquian and Haudenosaunee peoples, with some

overlapping elements that are common to several groups in the Northeast (Parker, 2012). A tree

is a central figure in a creation story that many North Eastern groups subscribed to, including

members of the Haudenosaunee as well as Algonquian-speaking groups such as the Delaware,

Lenni Lenape, and likely Muhhekunneuw (I could not find anything on their version of this story

specifically, but I am assuming there are similarities since they were related to and in frequent

contact with their southern Algonquian Lenni-Lenape and Munsee kin and thus share many

cultural traditions; the Lenape were known as the 'grandfathers' to the Muhhekunneuw because

of their shared heritage; Bruegl, 2021; Parker, 1912). Because their stories were passed down

via a rich oral tradition until Europeans introduced written language, and because each group had

their own variations anyways, there are many different versions of commonly held stories

(Parker, 1912). I read several versions of their creation story and attempted to synthesize the

common elements. All of them generally described a sky world that floated above and out of

sight of the water world below.

> There was a vast expanse of water. . .. Above it was the great
> blue arch of air but no signs of anything solid. . .. In the clear sky
> was an unseen floating island sufficiently firm to allow trees to grow upon
> it, and there were men-beings there. (Parker, 1912).

Here all the sky people lived in utter peace and harmony and lived under the Great Spirit

or Great Chief. According to Parker (2012), this is probably the piece of the story that has the

most variation: some stories describe a Great Chief, Sky Chief, or Great Spirit, while others

describe an overarching Divine Force. To some this Figure is personified, to others It is not.

 In the center of this island stood a tree:

> In the center of the island there grew a tree so tall that no one of the beings who
> lived there could see its top.

On its branches flowers and fruit hung all the year round.
 The beings who lived on the island used to come to the tree
and eat the fruit and smell the sweet perfume of the flowers. (Parker, 1912).

Different telling's give different reasons for the following, but the common theme is that

the tree is pulled up at the behest of the Great Chief. In one telling it is when His daughter grows

sick, He instructs her to "dig up the wild apple (aka crab apple-- apples as we know them had not

been introduced by the Europeans yet) what will cure her she can pluck from among its roots"

When the tree was dug up, as she was laid beside it both her and the tree fell through the hole

(Parker, 1912). In another telling the Great Chief pushes her through the hole under the tree after

finding out about an illicit pregnancy (Norton, 1816). And in yet another telling, it is a

purposeful decision where the Great Chief convened the sky people under the council tree and

said something along the lines of

 We will make a new place where another people may grow. Under our council tree is a
great cloud sea Which calls for our help. It is lonesome. It knows no rest and calls for light. We
will talk to it. The roots of our council tree point to it and will show the way" (Converse, 1908).
He then ordered the tree to be pulled up and instructed pregnant Ata-en-sic, Sky Woman or Sky
Mother, to look down to the watery world below and to bring it life. "He wrapped her in light
and dropped her down through the hole" (Stebbins 2020).

Once her and the tree fall from the sky, several animals band together to save her from

drowning in the ocean world below. She is caught by a duck or in some cases swans. Then

several animals, usually including otter, beaver, and muskrat dove to the bottom of the sea to

retrieve earth to place on the Great Turtle's back (Brown, n.d.; Norton, 1816; Parker, 1996;

Stebbins, 2020).

In one telling: "the Great Turtle told them that the appearance of a woman from the sky
was a sign of good fortune. Since the tree had earth on its roots, he asked them to find where it
had sunk and bring up some of the earth to put on his back, to make an island for the woman to
live on" (Brown, n.d.).

In some versions it is the muskrat who finally succeeds, in some it is the toad, in either case, earth is successfully dredged up and placed on the turtle's back where it has the magical property to grow and grow. Once it was as big as an island, Ata-en-sic was placed on it to recover. In time the island grew to become the current extent of the world or the North American continent (Brown, n.d.; Norton, 1816; Parker, 1996; Stebbins, 2020).

Another story talks about the Sky Woman's twin grandsons, or in some telling's, her sons. One twin is alternatively termed the light, good-minded, or sapling twin and the other is the dark, toad-like, or flint twin (Flint, evil spirit of Iroquois mythology, n.d; Parker, 1912). While some versions feature Flint as a villain, others treat him as more of a trickster, particularly Algonquin traditions (Flint, evil spirit of Iroquois mythology, n.d.). Regardless he is known for undoing his brother's creation work. One version of the story describes the light twin, or sapling, creating a "tree of light" that had a "great ball of light at its top branch" (Parker, 1912). Eventually he makes a new light which he hangs around the neck of a being who is to run with the light daily between the heavens. Afterwards he digs up the tree of light and upon seeing his reflection in a pool of water under the stump, he conceived of the idea of creating people. In another version his brother and him create people together which represents the dual nature of mankind (Norton, 1816). In the Lenni Lenape and Delaware version, people grew from the branches of the central world tree that grew on the back of the tortoise (Parker, 1912). In these stories, trees are integral elements to the creation of the world, people, light, and goodness. The story of the twins Sapling and Flint represent the necessary balance between creation and destruction. Trees themselves can represent the dual nature of creation and destruction inherent

to all living things: "He creates green things and provides oxygen to other living beings. But tree also destroys, breaking up the ground and rock with his root system" (Koehler, 2013).

The Haudenosaunee story about the origin of maple syrup (or wahta ohses) is also telling about their environmental philosophy (Koehler, 2013). To ease the suffering brought on by long and bitter winters filled with cold and want for fresh food, the Creator asked the trees to give the gift of their blood for the nourishment of the people and to mark the beginning of spring. The Creator instructed the people to harvest this by inserting sumac tubes into the maple's bark. Upon returning to Earth many years later, The Creator found that the people and even their dogs had become so enraptured with the constantly flowing sap that they neglected all other duties. To discourage this abuse, from then on, The Creator made it so that gathering maple syrup would be much more labor intensive and would require many hours of heating the sap and boiling away the water to obtain the sweet syrup. The people were instructed to hold ceremonies where they thanked the trees for their gifts (Koehler, 2013). This ceremony is still one of the thirteen ceremonies performed by the Haudenosaunee to mark lunar years (George-Kanentiio, 2019). Going into the 'sugar bush' and tapping trees for the processing of maple syrup was a spring celebration custom for the Muhhekunneuw as well (Davis, 2001).

Reciprocity, moderation, giving thanks, and preserving peace are central to Haudenosaunee ethics, and are necessary for enacting the 'principle of the dish with one spoon' with which they share with others and the natural world (Koehler, 2013; Parker, 1916; Venables, 2010). Quoting Haudenosaunee chiefs when discussing the founding of the Five Nations, (Parker, 1916) writes,

> We shall only have one dish (or bowl) in which will be placed one beaver tail
> and we shall all have coequal right to it, and there shall be no knife in it, for if

there be a knife in it, there would be danger that it might cut someone and blood
would thereby be shed. (Parker1916:103).

The bowl is a metaphor for the woods where people from different nations had an

agreement of peace and mutual use of the woods and the food and materials they provided

(Venables, 2010). "After each statement of thanks is given to the fishes, the birds, the animals,

the plants, those gathered echo back 'now our minds are one'" (Koehler, 2013). Being 'of one

mind' is not representative of conformation or assimilation, but rather of each creature and

person bringing their unique experience together to be in community. This is not to say that there

is an expectation of totalizing harmony, however divergences from being of one mind are not

seen through the European lenses of sin or guilt, but rather represents that individual being 'out

of their right mind'. This is not treated as sinfulness that needs punishment or repentance, but

rather a sort of sickness that needs help through "medicine, singing, counseling, and healing

ceremonies" (Koehler, 2013). "Health care was based principally on diet and use of particular

medicinal plants, guided by community members with divine spiritual intuition and primary care

skill sets passed down through generations" (Bukowski et al., 2018). Life according to

Haudenosaunee traditions is not about subscribing to absolute laws, but about being pragmatic

and doing what you can to rekindle balance (Koehler, 2013).

Cornell professor, Robert Venables, summarizes this by saying, "The

Haudenosaunee see different trees in a different forest" (Venables, 2010). The environment and

society are not seen as distinct things but are instead integrated through the concept of

community. In 1979, Oren Lyons, Onondaga Haudenosaunee leader and a spokesman for the

Haudenosaunee said, "In our perception all life is equal, and that includes the birds, the animals,

the things that grow, things that swim. All life is equal in our perception" (Lyons, 1980).

Additionally, it is the Haudenosaunee who are credited with the idea that individuals should act with the next seven generations in mind, so as to improve their situation instead of bringing them harm (Venables, 2010).

Lastly, a tree, the white pine in particular, is representative of peace, which is the foundation of the creation of the Five Nations (now Six, including the Tuscarora) Confederacy (Parker, 1912). This form of government is thought to be the oldest participatory democracy in the world and was an inspiration to the founding fathers for the creation of the United States Constitution (Little, 2020). Sometime between 1142 and 1450 CE, the "Great Peacemaker", Dekanawide, along with Hiawatha, brought together the five nations of the Mohawk, Onondaga, Oneida, Cayuga, and Seneca (Parker, 1912). This is recorded in the Wampum Code of the Five Nations Conference, or the Great Law of Peace:

"I am Dekanawide, and with the Five Nations' confederate lords I plant the Tree of the Great Peace. I plant it in your territory, Adodarho and the Onondaga nation, in the territory of you who are the Fire-keepers. I name the tree the Tree of the Great Long Leaves. Under the shade of this Tree of Peace we spread the soft, feathery down of the globe thistle, there beneath the spreading branches of the Tree of Peace"

"If any individual or any nation outside the Five Nations shall obey the laws of the Great Peace and make known their disposition to the Lords of the Confederacy, they may trace the Roots to the Tree, and if their minds are clean and obedient…they shall be welcome to take shelter beneath the Tree of the Long Leaves"

"I, Dekanawide, and the union lords now uproot the tallest pine tree and into the cavity thereby made we cast all weapons of war. Into the depths of the earth, down into the deep under-currents of water flowing to unknown regions we cast all the weapons of strife. We bury them from sight and we plant again the tree. Thus shall the Great peace, be established" (Parker, 1912).

Sharing these stories is not meant to romanticize or idealize these cultures, nor do they even scratch the surface of understanding them, but they are a good place to start from when

trying to acknowledge some of the motivations responsible for shaping these peoples and their places. Most significant is that they approached that natural world with a regenerative ethos and beyond covering their subsistence needs, used natural capitol to enrich their social and cultural capital (Bukowski et al., 2018).

Newcomers from Across the Atlantic

Between the 15th and 16th centuries the Age of Exploration brought waves of European explorers to the Americas with the goals of accruing wealth and influence for themselves, their nations, and their commerce organizations (Bradley, 2007). With the arrival of Christopher Columbus began the practice of land grants called the "right of discovery"— this meant that according to the authority of the pope and subsequent colonial governments, whichever explorer "discovered" a place on the American continent from then on had property rights over it (Venables, 2010; Bruegl, 2021). While it is easy to bunch settlers under the labels of Dutch, French, English, etc., it is important to note that at different points in time these settlements also included "Scandinavians, Croatians, Scots, Germans, Spaniards, Belgians, Africans, and West Indians" (Schlimmer, 2019).

In 1540, a mere 48 years after Columbus' landing in the Caribbean, a group of French fur traders built a trading post offshore of Albany in the Muhheakantuck on what they called Castle Island (Schlimmer, 2019). For many years relations between the Indians and Europeans were relatively sparse and based mostly on friendly trade relationships; the newcomers primarily sought out of beaver furs which were highly valuable across the Atlantic (Bruegl, 2021; Schlimmer, 2019).

It should be noted that prior to this, European diseases were already starting to make their rounds among the Indigenous Peoples of the Americas (Bruegl, 2021; Venables, 2010). The highly traveled and thousands' year-old trade routes that linked and benefited their civilizations became part of their downfall as it created an efficient means for the spread of diseases such as smallpox, typhoid, bubonic plague, influenza, measles, and a more virulent form of syphilis (Venables, 2010). By 1535 some Haudenosaunee groups were already dealing with the fallout of a smallpox epidemic introduced by the Spanish (Venables, 2010).

In 1609, Henry Hudson sailed up the Hudson River and landed in present-day Albany (Bradley, 2007; Schlimmer, 2019). In his ship logs he noted finding "the finest land for cultivation that ever I set foot upon"; "the country is full of great and tall oakes. Goodly oakes" William Barnes (as cited in Schlimmer, 2019), and "the wild vine clambered in rich luxuriance on the forest trees and threw its graceful festoons from the mossy bank of the river". When he arrived, he was welcomed ashore by the Mohicans who shared with him meals as well as lessons on their food procurement and processing techniques (Lavin, 2011)

. Between 1613 and 1614, the New Netherland Company, granted a monopoly on trading rights by the Dutch, built a new fort on Castle Island for Dutch and Indigenous traders to meet (Bradley, 2007). They called this new fort, Fort Nassau and called the surrounding area Beverwyck, translated the Beaver District (Schlimmer, 2019; Bradley, 2007). Muhhekunneuw and Kanienkehaka brought furs to the post, traveling on established trails through the pine bush to trade for useful European items, including guns. After another flood and conflicts between the settlers and the indigenous inhabitants, those associated with the New Netherland Company abandoned the fort until the Dutch West India Company resettled it for trading in 1624, rebuilding the fort and renaming it Fort Orange (Bradley, 2007). From the establishment of this

fort, Albany became the longest continuously occupied European settlement in the original thirteen colonies (Schlimmer, 2019). They settled a colony that they called "New Netherland " which included parts of present-day Pennsylvania, New Jersey, Long Island, Massachusetts, Maryland, Delaware, and Eastern New York (Bradley, 2007). By the 1620s more than 7,000 beaver skins were being sent out of the Hudson Valley each year, by the 1630s that rose to 30,000, then 80,000 by the 1680s (Bradley, 2007). However, beavers became extirpated in Albany long before that peak, being gone by the 1660s (Bradley, 2007). By the end of the 18th century nearly all beavers in North American had been trapped out (Bradley, 2007).

Desiring a more permanent and profitable foothold in the region than could be achieved through trading alone, the Dutch government encouraged agricultural settlers to travel to Beverwyck (Bradley, 2007). They did this by establishing a feudal system— the only one to ever exist in the United States— whereby they encouraged wealthy lords, called Patroons, to purchase tracts of land in New Netherland and recruit tenant farmers. The Patroon had complete sovereign rule over the patroonship and its inhabitants; the tenants had to pay tithes and rents on their land and had to gain permission for any activities including fishing, trading, hunting, and building (Bradley, 2007). In 1629, a jewel merchant named Killaen van Rensselaer sent representatives to 'purchase' around 700,000 acres of land primarily from the Muhhekunneuw; he would never actually visit this land himself (Bradley, 2007; Rensselaer, 2018). This land, called Rensselaerswyck, stretched from present-day Cohoes Falls, South to Barren Island and reached 23 miles East and West from each shore (Bruegl, 2021; Schlimmer, 2019). Van Renssalaer incentivized his tenants to clear as much forest as possible to make room for crop cultivation by requiring them to pay rents on the initial lands they were given, but not on any additional lands they cleared (Rensselaer, 2018). In 1633 Killian's nephew brought more settlers to New York

who were "ready to tame the wilderness" (Schlimmer, 2019). Before farmlands were cleared or buildings established, the first thing settlers did was build sawmills for cutting and processing lumber. For decades, the area around Fort Orange was described as "little and wretched" with about one hundred settlers "beating back the encroaching forest" (Schlimmer, 2019).

The language used for this endeavor belies the violence inherent in their new occupation of this land: in "taming" and "beating back" the forest they were attempting to do the same to the peoples who cared for and relied on those forests. To these new settlers, the forest was unknowable and emblematic of evil forces (Schlimmer, 2019). Quoted in an article from the 19th century Horticulturist magazine, "Our ancestors had a valid excuse for thus destroying the primeval forest…Each tree afforded a shelter for the savage Indian, who, with tomahawk and scalping knife, darted from behind huge grey boles, to inflict a sanguinary death upon those who ventured beyond the 'clearing', thus he who destroyed a tree brought his labor to an excellent work" (Jonnes, 2017).

As the forest was cleared and land privatized and fenced in, Indigenous People were increasingly marginalized from their life-giving lands and waters. The two groups, already weakened by disease and rapidly losing their means of subsistence, became increasingly dependent on trading for European goods in order to survive (Bruegl, 2021). As the beaver population declined, competition and hostilities between the Kanienkehaka and Muhhekunneuw grew hotter, in what became known as the Beaver Wars. The Southern Muncees and Lenni Lenapes added might to the Muhhekunneuw's fight, but by 1628 the Kanienkehaka, with the help of Dutch arms, pushed the Muhhekunneuw to the East of the Hudson and gained a monopoly for themselves on trading with the Dutch at Fort Orange (Bruegl, 2021). During the Beaver Wars, French and Indian War, and the American Revolution, different Indigenous groups

aligned themselves with various European powers. Who they sided with was a major factor that determined when they would be displaced from their lands and where they would end up.

While some lands were appropriated via outright hostility and thievery, many records exist documenting land sales between Indigenous Peoples and the Europeans (Bruegl, 2021; Davies, 1996). Despite this, it is still problematic to consider the lands as anything but ill-gotten. For one thing, the documents were in foreign languages and sometimes were signed under coercion and duress (Bruegl, 2021). But, perhaps the most important thing that nullifies the idea that these sales were consensual and mutually agreed upon is the fact that the settlers and the Indigenous Peoples had vastly different conceptions of property (Bruegl, 2021; Venables, 2010). It is a misnomer that Indigenous Peoples of the area had no concept of private land: while the much of the woods and waterways were communally used, different groups still had established territories that they guarded (in some cases using trees to demarcate these territories), and in fact the Haudenosaunee have a matrilineal system through which property was inherited and controlled through the lineage of mothers (Bruegl, 2021);(Bradley, 2007);(Venables, 2010). However, ownership extended mostly to the use of the land, not the land itself. This is evidenced by the fact that many early land-sale documents included provisions for certain continued uses of the land by the sellers. Two such deeds from Deerfield, Massachusetts read:

. . . that they (the Indians) shall have and enjoy all that cottinackeesh, or ground that is now planted; And have liberty to take Fish and Deer, ground nuts, walnuts, akornes and sasachiminesh or a kind of please . . . (deed for a part of Agawam, MA).

. . . (the Indians) doth reserve liberty of fishing for ye Indians in ye Rivers of waters and free Liberty to hunt deere or other wild creatures and to gather walnuts, chesnuts and other nuts things &c on ye Commons . . . (deed for a part of Deerfield, MA) (Davies, 1996).

This resulted in confusion and frustration when lands were later completely privatized and closed off. In the case of the sale of the island of Manhattan, the Lenni Lenape believed

themselves to have "sold the grass" and the use thereof, not the land itself (Bruegl, 2021). To enforce their later exclusion, the Dutch built a wall around the settlement, the location of which would later become New York City's Wall Street (Bruegl, 2021; Schlimmer, 2019). During his 1854, 4th of July address to the New York State Assembly, Mohican statesman, John Wannuaucon Quinney told the assembly,

> Let it not surprise you, my friends, when I say that the spot upon which I stand has never been rightly purchased or obtained. And by justice, human and Divine, is the property of the remnant of the great people from whom I am descended. They left it in the tortures of starvation and to improve their miserable existence; but a cession was never made, and their title was never extinguished (Quinney, 1854).

In 1652 in an effort to formalize Dutch settlement, the governor of the New Netherland colony, Peter Stuyvesant, staked out land surrounding the outpost of Fort Orange, establishing the town of Albany, then called dorpe Beverswijk, or "The Village of the Beaver District" (Bradley, 2007; Rensselaer, 2018). He established a town court charged with allocating plots of land for inhabitants and overseeing settlers' adherence to the common Burgher Oath, which admitted them to partake in privileges of the town, namely the right to trade furs with the surrounding Indigenous Peoples (Bradley, 2007; Rensselaer, 2018).

In 1655 early Dutch settler, Adriaen Van der Donck, wrote a publication encouraging more Dutch colonists to join him along the Hudson River (Russell, 1983). In this publication he wrote, "the whole country is covered with wood, and in our manner of speaking, there is all too much of it, and in our way…" (Russell, 1983). He then described the annual burns he witnessed being done by the Muhhekunneuw and claimed that "the Christians", meaning other Dutch settlers, saw and adopted the practice themselves (Davies,1996; Russell, 1983). While the fires occasionally threatened some of their wood structures, they saw the benefits as outweighing that disadvantage. They describe how these fire-altered landscapes facilitated their establishment

because the thinned woods were easier to later clear for cultivation and settlement (Davies,1996; Russell, 1983). A settler in the Plymouth colony wrote "the Lord (had) mitigated (the) labors of (of the colonists) by the Indians frequent firing of the woods…which makes them thin of timber in many places" (Davies, 1996).

And clear the woods they did, with an eye towards future profits. European agricultural, pastoral, and forestry practices worked in tandem with each other, in attempts to superimpose Western Europe's landscapes and way of life on this new land and its people. From the 1600s to the 1800s indigenous populations collapsed and the environment drastically changed accordingly (Abrams & Nowacki, 2008). Over this period the 'goodly oakes' that Henry Hudson surveyed were being cut en masse for the shipbuilding industry, among other uses (Albany Pine Bush Preserve Commission, n.d.) (Schlimmer, 2019). The pitch pine from the Albany pine bush were also used to make pine tar, used as an adhesive and waterproofing substance for ship building (Schlimmer, 2019). As the woods were cleared, pastoral and agricultural fields took their place, leading to soil erosion, compaction, and loss of nutrients, and a decline in biodiversity (Davies, 1996) (Venables, 2010). During this transition period both the settlers and the indigenous inhabitants adopted some of each other's food stuffs, resulting in a food system unique to the place of these clashing cultures (Bukowski, et.al., 2018) (Weise, 2018).

The Dutch Transfer Power to the English

In 1664, the Dutch surrendered their territories under the New Netherlands to British Colonel Nicolls and Beverwyck finally became Albany (Schlimmer, 2019) (Weis, 2018). Despite English

control, there was not much actual English colonization of the upper Hudson, so the character of

the area remained largely Dutch until the early 1800s.

Profits from the land depended on minimizing political conflicts with Native Americans.

In 1670, a meeting was called by Governor Lovelace to come to an agreement and put an end to

fighting between the Mohawks, Mohicans, and English, eventually winning the allyship of the

Mohawks that would last through the later War of Independence (Schlimmer, 2019) (Weise,

2018). As the later part of the 17th century approached, Eastern indigenous groups had rapidly

shrunk in numbers and power. In 1680 Dutchman, Jasper Danckaerts, wrote "the Indians are

melting away rapidly…I have heard tell by the oldest New Netherlanders that there is now not

1/10th part of the Indians that once were, indeed, not 1/20th or 1/30th and that now the

Europeans are twenty and thirty times as many" Jasper Danckaerts (as quoted by Venables,

2010).

At this point the lands west of Albany were the main landholdings left that were

considered "Indian lands" (Schlimmer, 2019).

In the Woods, the indigenous animals, fish, birds, trees, and other beings were dying off
and were being replaced by the plowed fields and domesticated animals of the Americans. On
the Haudenosaunee reservations, the people increasingly felt that they were "alone" – recall that
they regarded all the other beings as their equals, with souls. Moreover, each nation's surviving
Clearings – the towns – also stood in isolation, no longer connected to each other by the physical
link of The Woods. Whatever lands were left – reservations – were by default "Clearings,"
although the reservations' various town centers were physically rimmed with woods
(Venables, 2010).

While their numbers and landholdings had shrunk significantly, the Kanienkehaka

remained living in pockets in the pine bush to the west of Albany. They continued many of their

cultural traditions but incorporated several European elements as well. For example, many had

converted to Christianity at this point, for some this was partially for survival through the

hopeful acceptance gained from assimilation, and for others it may have partially been a

psychological coping mechanism (Bruegl, 2021) (Venables, 2010). For example, converting to Christianity allowed them to somewhat divorce themselves from the cultural beliefs that saw each living thing as having a soul that must be treated with a respectful and reciprocal nature, and instead see them — as the Europeans saw them— as resources granted by Providence for their worldly gain (Venables, 2010). This likely made it slightly easier to do what they had to do, i.e., trap beavers in order to survive and to see the wildlife disappearing around them (Venables, 2010). Some Indigenous Peoples, not limited to the Haudenosaunee, converted to Christianity because they saw the prosperity of the Europeans relative to their own decline as evidence that the Europeans' God might better be able to protect them (Bruegl, 2021). It was necessary for survival for them to start utilizing natural capital to gain financial capital (Bukowski, 2018).

They continued to be associated with orchards, many of which now incorporated some imported species such as varieties of apples, plums, peaches, and pears (Bukowski, 2018) (Weise, 2018). The naturalist, Peter Kalm, visited Albany around this time and described that "detached Indian families" would still come and stay for the summer, some building wigwams in the orchards bordering the wealthy residences on the outskirts of the city (Weise, 2018). During the summer they would occupy themselves with artisan crafting of household items, including items made from birch wood and bark, such as baskets, brooms, and wooden dishes and cutlery. Meanwhile preserving for the winter locally caught eel and sturgeon from the Hudson River. They cultivated small plots in the fields surrounding the Mohawk River and, in the Summer, and Fall young girls were tasked with gathering and preserving fruits, berries, and grapes. A colonist commented, "These dried fruits were no luxury; a fastidious taste would entirely reject them. Yet, besides furnishing another article of food, they had their use, as was evident", concluding

that while these foods might not be very rich tasting, they surely contributed to the lack of visible ailments of the native people who consumed them (Weise, 2018).

Every farm in Albany at this time had a large orchard, which along with hunting and fishing, contributed to the diets of natives and foreigners alike Peter Kalm; s Travels to Albany (as cited in Weise, 2018; Bukowski, 2018). The post-colonial diet continued to rely on the "uniquely-American polyculture, born out of a convergence of cultures" (Bukowski, 2018). This was a diet based on baked goods made of European rye, oats, and wheat, supplemented with fruits, veggies, and herbs grown in home gardens, as well as livestock such as pigs and poultry. They continued to integrate fruits, nuts, and berries from the nearby trees and shrubs. Most vegetables were not eaten whole, and it was rare for them to eat leafy greens but were instead used in sauces to pair with bread and meat (Bukowski, 2018).

In 1686 the Dongan Charter was enacted by New York Governor Thomas Dongan who appointed Pieter Schuyler as the first mayor of Albany (Schlimmer, 2019; Weise, 2018). Pieter served as mayor for nearly a decade, until 1694 (Schlimmer, 2019). Schuyler and Dongan, worked to continue the process of economic exploitation of Albany and beyond. Former historian of the New York State Museum, Stefan Bielinski, called this charter "arguably the longest-running instrument of municipal government in the Western Hemisphere" (Fitzpatrick, 1998). The charter created a distinction between the Rensselaerswyck colonial estate from the one-by-sixteen-mile strip of land called the Town of Albany (Bielinski, 2009). The provisions of these charter established an economic regime that would impact the relationship between the city and its hinterlands and their respective development for centuries. A wooden stockade was built in the center, creating a barrier behind which most of Albany's residents lived. The charter granted special privileges to the town's residents, of particular importance: the right to trade with

indigenous groups, excluding all other New York residents from this activity. The economic power granted by these trading rights freed Albany residents from having to rely on agricultural production and created favorable power dynamics over those living in the surrounding countryside who were relegated to agricultural and extractive activities (Bielinski, 2009). According to Bielinski (2009), "these farmers were permitted to grow and harvest agricultural products and to cut, cure, and otherwise prepare produce and forest and mineral products for sale on the Albany market", however, hunting was allowed only by those licensed by the Albany corporation.

Unpleasant industrial operations were relegated to the city fringes, particularly on the South end of the city bordering the Hudson River, West of the city in the woods, and along the various rivers and streams— a pattern that in part still exists today (Bielinski, 2009) (Sherpa et al., 2014). Such environmentally undesirable activities originally included brickmaking, sawing, tanning, and activities involving fire, such as smithing (Bielinski, 2009).

Trade was the most lucrative enterprise, members from this class included "former Van Rensselaer tenants, discharged West India Company employees, and a sprinkling of French-heritage settlers, Scots, and others from New York and New England" (Bielinski, 2009). Descendants of New Netherland's first settlers made family connections and alliances with select ambitious newcomers (Bielinski, 2009). Families among this group include names such as Bleecker, Cuyler, Lansing, Roseboom, and Schuyler: names whose influence have been carried through the centuries by mayors, statesmen, and other politicians, business leaders, real estate moguls, and on many of the street names and landmarks that decorate Albany today (Bielinski, 2009) (Schlimmer, 2019). These well-connected Dutch-heritage merchants dominated the trade industry for almost a century, after which they largely dispersed into the countryside where they

managed manicured estates and used their city and country connections to establish themselves in retail and in high society. In their farms, orchards, pastures, and woodlands, tenants gave way to laborers and slaves who worked under overseers. By the end of the 17th century Albany had over a quarter of New York's residents and was the largest population center in the state; a preeminent business center thanks to its well-established and favorable commercial climate and travel infrastructure (Bielinski, 2009) (Schlimmer, 2019).

In 1776 Albany's first formal port was created with the construction of three large docks and a seawall, further cementing the city as a heart of industry, trade, and political power (Bielinski, 2009). In the country, settlers continued to clear forests and farm. With industrialization gaining steam in England, these countrymen gained a new way to profit and gain credit as they started running into more marginal lands (Roberts, 1972). While clearing these marginal woodlands to make space for their fields, the leftover wood, much of it being sub-par timber and wood bits, was gathered for the processing of an industrial miracle substance: potash. Potash is a substance that features water-soluble potassium made from soaking plant or wood ashes in a pot (hence the name potash) (Roberts, 1972). As the Muhhekunneuw and the Kanienkehaka knew, wood ash was valuable as fertilizer, for making lye solutions for soap, and for leaching tannins from acorns and wood (Abrams & Nowacki, 2008). The Dutch, and later the English and the Americans, used it for this, but also by leaching the ashes in water then evaporating the water from the ashes they obtained white powdery potash (Roberts, 1972). For centuries potash had been used for bleaching textiles, making glass and ceramics, and for making soap; potash was one of the first major industrial chemicals, and England's fast-growing industries demanded a lot of it. The potash boom that ramped up from 1770 onwards created a market in which the price for potash rose daily. In 1776 New York was exporting more than 100

tons of potash yearly (Roberts, 1972). The first ever patent issued in the United States was issued in 1790 for a process that refined potash into pearl potash, so named because of its bright white sheen, which was the precursor to modern-day baking soda (Schlimmer, 2019). The Pearl Potash Company operated in Albany on Pearl Street for many years (Schlimmer, 2019). Around 1820 New York became the primary source for American potash and was exporting more than 3,000 tons of potash annually (Roberts, 1972).

American Independence

The American Revolution heated up in the 1770s; in 1774 the Americans entreated neutrality by the Kanienkehaka through the appropriation of the Haudenosaunee's symbolism of white pines and peace, "Brothers! We live upon the same ground with you. The same island is our birthplace. We desire to sit down under the same tree of peace with you: let us water its roots and cherish its growth, till the large leaves and flourishing branches shall extend to the setting sun and reach the skies" (US National Parks Service, n.d.). However, the Kanienkehaka's hope that if they secured a British victory the British might halt any further appropriation of their lands by the settlers proved more appealing (Bruegl, 2021).

Following the American Revolution, the Americans made more explicit moves to assimilate and/or remove indigenous peoples (Bruegl, 2021) (Venables, 2010). Pressured by land developers, New York State and the United States made a total of 56 treaties between 1784 and 1857 that transferred most of the woods and clearings still in the possession of Indigenous Peoples to the newly minted Americans (Venables, 2010).

Because the Kanienkehaka sided with the English during the French and Indian wars as well as the Revolutionary War they were immediately forced out (Saint Regis Mohawk Tribe, n.d.). Most of the Mohawks eventually ended up either around Niagara Falls or Montreal, Canada. The Mohawk St. Regis Reservation is currently in Franklin Country, New York and members can freely cross the American and Canadian border (Saint Regis Mohawk Tribe, n.d.). In the 20th century many of them became influential in the construction and steel-working industries (Nessen, 2012). Currently around one in ten steel workers is Mohawk, some own construction companies and workers will often drive from their upstate reservation to Manhattan then back during the weekends. "Virtually every skyscraper … has been built by Mohawk and other Iroquois ironworkers including the new Time Warner building…Rockefeller Center, Empire State building, Chrysler, all these skyscrapers, virtually all the bridges" (Nessen, 2012).

The Mohicans that had settled in Stockbridge, Massachusetts after displacement from the Albany area were pressured by settlers laying false claims to their lands and moved to Oneida Lake in New York where the Oneida shared parts of their fields and forests with them (Bruegl, 2021). Despite fighting on the side of the Americans after being recruited with promises of land tenure, after George Washington threw a celebration in their honor, the Mohicans that were left in New York State were promptly pushed West (Bruegl, 2021). In 1834, Stockbridge, Wisconsin became the official home of the Mohicans, Munsee, and Wappingers, now collectively known as the Stockbridge-Munsee Band of Mohicans. The area was heavily wooded with many species common to their homelands, however in 1887 the General Allotment Act divided reservations in the country into privately owned lots (Bruegl, 2021). Many of these were coercively obtained by lumber barons who proceeded to deforest much of the reservation (Stockbridge-Munsee Band of Mohicans, n.d.). Since then, the tribe has regained around 23,000 acres, 20,000 of which have

successfully been reforested and now provide healthy habitat as well as timber revenues for the tribe (Stockbridge-Munsee Band of Mohicans, n.d.). They also run a casino and are the largest employer in the county (Bruegl, 2021). Even though their histories since European colonization have a long record of abuses and injustices, the stories of the Stockbridge-Munsee, the Mohawks, and all other existing Indigenous Peoples of the Americas are not stories of victimization and defeat but are stories of resilience and continuity.

"With the end of the war and the opening of the frontier to settlement, Albany became an American boomtown. New settlement burst its stockaded colonial boundaries and spread along the river and up the hill— adding many new business, residential, and industrial blocks for a population that would multiply fifteen-fold before the Civil War" (Colonial Albany Social History Project, 2008). According to Schlimmer (2019), by 1795 over five hundred families were passing through Albany every day on their way West. An entry in an 1817 encyclopedia stated, "the great roads of communication between the eastern states and the western country center on more extensive intercourse at Albany than at any other place between the eastern and western sections of the Union" (Schlimmer, 2019). That same year marked the beginning of construction on the Erie Canal, which attracted immigrant labor from across the Atlantic, namely Irish immigrants, for construction work. Once the canal was built it facilitated the flow of migrants, cargo, and ideas in a way that had never been possible with overland transit alone. Shortly after, railroads would contribute to this as well (Schlimmer, 2019).

In the 40-year period between 1820 and 1860 Albany's population grew 400% from 12,000 residents to 60,000 (Davenport, 1989). Most migrants who moved to the City of Albany during this time traveled relatively short distances from home. 60% traveled from 15 to 30 miles away, while only 20% came from more than 120 miles away (Davenport, 1989). Most of those

who came from farther away were higher-status white-collar workers who came from other cities, such as Boston and New York City, and likely relied on societal connections for economic opportunities there. Migration seemed to be unrelated to the condition of their farm's yields, but rather due to increased opportunity and upward mobility to be availed from joining Albany's business, craft, or building trades. While migrants and their families often experienced upward socioeconomic mobility, their migration likely contributed to the "economic stagnation of rural areas" as rural areas lost merchants, skilled workers, intellectuals, and capital (Davenport, 1989).

In the stagnating countryside, extractive industries kept the poor afloat (Davenport, 1989) (Schlimmer, 2019). By 1850 New York dominated the lumber industry, much of which now consisted of imported spruce due to the decline of favorable native lumber. The state had over 7,000 sawmills that were pumping out hundreds of thousands of board feet of lumber (Schlimmer, 2019). According to Schlimmer (2019), Spruce Street was likely the main site of spruce milling in Albany and the Ten Broeck Triangle was called the lumber district because it housed several of the local lumber barons. Prior to urbanization, most farms tanned and prepared their own leather from wild and domestic animals (Canham, 2011). With the rise of urbanization, as farmers increasingly left the countryside, leather tanning grew into an industry in its own right (Canham, 2011). Tanning gets its name from 'tannin', recall the chemical that native americans leached from acorns (Abrams & Nowacki) (Canham, 2011). Tannic acid is an astringent derived from plant tannins, with the most concentrated plant tannins found in hemlock bark (Canham, 2011). Tannic acid makes leather resistant to water and decay. Hemlock trees, many of which had been previously left alone due to their poor-quality lumber, were the next to be nearly decimated, as tanners stripped thousands of them of their bark, leaving the standing stumps to rot (Canham, 2011).

From the late 1700s through the 1800s the food system experienced a massive shift (Bukowski, 2018). Westward movement opened broader swaths of the continent, allowing for the food system to shift from one made up of small-scale agriculture, hunting, and foraging in the East to one based on "economies of scale in the deep, fertile soils of the Midwest" (Bukowski, 2018). As people moved to the city, they were freed from the banalities of food production, and transportation via water, rail, and improved roads allowed for food to be shipped from further and further at low cost. As urbanites became increasingly separated from the land, the mental disconnect of how food ends up on one's plate grew, and by the end of the 19th century, food production in the city increasingly became an unsavory and foreign appeal (Bukowski, 2018).

Nature Becomes Virtuous and Worthy of Protection

While cities and their hinterlands buzzed with development and extraction, the wealthy increasingly turned their energy and attention towards enhancing their estates. Here they focused on the collection of exotic plants and animals, cultivation of endless varieties of fruits, and overall beautification of their architecture and landscapes (Jonnes, 2017). In 1841, Andrew Jackson Downing—son of a fruit tree nursery owner in Newburgh— published his "Treatise on the Theory and Practice of Landscape Gardening" (Jonnes, 2017). This as well as subsequent articles in the Horticulturist Magazine and his other books, one of which was called "Fruits and Fruit Trees of America", propelled him to fame. His consultation on horticulture, architecture, and pomology (the study of apples), was sought by estate owners far and wide (Jonnes, 2017).

It is hard to exaggerate the obsession with apples that possessed Northeasterners of all classes. Settlers imported thousands of apple varieties, which were then diversified with selective

breeding to suit the various microclimates of the "new world" (Abrams & Nowacki, 2008) (Jonnes, 2017). For the most part apples were not eaten whole but were instead pressed into cider— a nice refreshing way to avoid water-borne illnesses that could be had from drinking straight water (Bukowski, 2018). Rowan Jacobson of the Boston Globe wrote, "Apples were some of the leading protagonists in the story of American ingenuity, diversity, and prosperity" Rowan Jacobson (as quoted by Bukowski, 2018). Grapes and hops for wine and beer were also popular; Albany's Arbor Hill was once the site of a vineyard that produced hundreds of gallons of wine each year by 1829 (Bukowski, 2018) (Schlimmer, 2019).

The estates of the Albany Region's elite stood on the hills overlooking the Town of Albany. Notable examples include the Cherry Hill Estate, founded by Philip Kiliaen van Rensselaer in 1792: this 1,000-acre farm featured a brewery, tannery, as well as orchards (Schlimmer, 2019). Another was the Schuyler mansion, overlooking the town's common pastures, which were located in today's South End Neighborhood. Philip Schuyler, father-in-law to Alexander Hamilton, was in the shipping and lumber business and owned over 125,000 acres of land in Albany and downstate (Schlimmer, 2019). Named for the Schuylers' expansive orchards, Cherry Street, Plum Street, and Vine Street all cross over the old footprint of this estate, with Mulberry Street just to the North of it (Kennedy, 1985) (Schlimmer, 2019).

Meanwhile, Andrew Jackson Downing, while visiting nobility in London and France, became enamored by their fashionable city parks, which to him emulated the beauty and pleasure of the Hudson Valley's estates transplanted in the city (Jonnes, 2017). To him this was the antidote to the ills faced by the urban upper and middle classes due to the worsening conditions of their cities from exponential industrialization, immigration, and urbanization. When he returned, he began using the Horticulturist Magazine to promote the idea of a central park in

New York City, claiming that parks such as that would be "better preachers of temperance than temperance societies, better refiners of national manners than dancing schools, and better promoters of general good feeling than any lectures on the philosophy of happiness ever delivered in the lecture room" (Jonnes, 2017. In addition to promoting sprawling pleasure grounds, his love of trees and his disgust at "every desolate, leafless, and repulsive town and village" prompted him to encourage tree planting along streets and avenues (Jonnes, 2017).

Already much of New York City's tree scape had been transformed by Ailanthus—commonly called Tree of Heaven for its rapid upward growth (Jonnes, 2017). Ailanthus is native to China but was brought back by a plant collector who saw them lining streets in European cities. In New York, after numerous complaints by downtown ladies about worms and bugs invading their homes through screenless windows due to the nearby trees, crews came in and cut down the horse chestnuts, lindens, and others to be replaced by the hardy Ailanthus, a tree that did not invite native bugs and wildlife that was unfamiliar with the plant. It did not take long for public sentiment to change about the tree; its invasive nature had by that time already become a nuisance as it spread quickly and ferociously depleted soils of their nutrients. In 1852 Downing died tragically in a steamboat accident while traveling down the Hudson River from Albany. Found in his manuscripts was the last piece of writing he was planning on publishing in the Horticulturist, *Shade Trees in Cities.* In this article he railed against the Ailanthus for its invasive nature, drawing xenophobic parallels that resonated with the anti-immigrant sentiment capturing the minds of overwhelmed urbanites at the time. He wrote that his was in part a "patriotic objection…This petted Chinaman or Tartar, who has played us so falsely, has drawn away our attention from our own more noble native American trees, to waste it on this miserable pigrail of an Indiaman" (Jonnes, 2017). Despite such regretful calls to action, Ailanthus was here to stay

and became one of the most successful introductions of a tree species to North America and can be found along many a disturbed roadside, abandoned lot, and forest edge (Jonnes, 2017) (Lowe et al., 2000).

In the countryside, people were already noticing the intolerable heat and erosion from rainwater no longer being captured by trees, giving rise to reminiscence about the old forests and a desire to reverse the deforestation caused by their ancestors and by the current poor (Jonnes, 2017). Mathematics and botany scholar, George Emerson, wrote, "A few generations ago, an almost unbroken forest covered the continent. Now those old woods everywhere are falling. The axe has made and is making wanton and terrible havoc…The new settler clears in a year more acres than he can cultivate in ten and destroys in a single burning many a winter's fuel, which would be better kept in reserve for his grandchildren" George Emerson (as quoted in Jonnes, 2017). Already, American Elm trees spared by the lumber industry dotted pastures and town squares. Praised for their hardiness, quick growth, and tall pleasing forms, American Elms quickly became a popularly planted street tree (Jonnes, 2017).

In 1853 Frederick Law Olmstead began designing Central Park in New York City with hopes of appealing to values of "fortune, taste, and refinement" (Jonnes, 2017; Schlimmer, 2019). His designs were meant to inspire 'rambling', which is essentially aimless strolling through winding paths past beautiful naturalistic scenery that was common among the upstate estates. Central Park began the trend of 'pleasure grounds' which were considered "public spaces for recreating, relaxing, and communing within a pastoral landscape, offering a highly fashioned escape from the hampered and health-threatening spaces of dense metropolitan quarters" (Bukowski, 2018) (Jonnes, 2017). The park would later serve as a venue where citizens released imported exotic species in an effort to further superimpose European nature on that of the

American continent. In the 1890s the American Acclimatization Society released one hundred European Starlings in Central Park with the nostalgic idea of acclimatizing all bird species mentioned in Shakespeare's plays to the new world (Mirsky, 2008). Both house sparrows and European starlings were established throughout the US and are currently some of the most numerous birds in New York State, often out-competing local bird species. European starlings are on the IUCN (International Union for Conservation of Nature) list of 100 worst invasive species in the world (Lowe et al., 2000).

Not only was this time and space for leisure inaccessible to most of the poor and societal outsiders, but it was a means of displacing them as well. At the time a place called Seneca Village thrived in the heart of Manhattan (The Central Park Conservancy, 2020). This settlement was one of the first settlements in the United States where black people could own land and was also home to a sizable population of Irish immigrants. This was especially significant for the fact that at the time property ownership was a prerequisite for the right to vote (The Central Park Conservancy, 2020). Seneca Village was a relatively rural enclave where its residents were able to garden, raise livestock, fish, and generally build a thriving community, complete with a church and school, away from the racism and urban ills of downtown. In 1853 New York City passed legislation to appropriate land for the construction of Central Park, this included Seneca Village and caused the displacement of over 1,600 people (The Central Park Conservancy, 2020).

Central Park inspired urban residents to push for pleasure grounds in several cities, Albany included (Waite et al., 1993). In 1869, after several years of citizen requests, Albany set into motion the creation of Washington Park. The park itself did not have to directly displace many people— the land to be turned into a park was previously the city's fair grounds and cemetery, and subsequent parcels were purchased from a few surrounding family farms.

Frederick Law Olmstead was initially recruited to design the park, but he ended up not being able to see it through due to other obligations. However, the final design largely worked off his initial draft and ideas (Waite et al., 1993).

The values embodied by the park can be understood through the extensive list of rules first put into place, with examples such as the prohibition of discharging firearms, throwing stones, playing ball or marbles, using profane language, passing through the park with "bundles of sticks, boards, ladders, and wheelbarrows, or any other unsightly objects", or "handling or appropriating the trees" (Schlimmer, 2019). As a pleasure grounds, the park was meant for the aesthetic appreciation of affluent park-goers, discouraging any activities that might disturb their aesthetic sensibilities such as the passing through of objects associated with the working class, or any activity that goes beyond passive interaction with nature, such as appropriating food or materials from the trees. The plan did not end there, Washington Park was but the center jewel of a network of parks and boulevards (Schlimmer, 2019).

The words and concepts of boulevards and avenues are both derived from French city planning trends from earlier that century (MacDonagh, n.d.) (Schlimmer, 2019). Boulevards were created on Paris's ramparts during Napoleon's rule. They were designed as wide tree-lined streets that all converged at the center of the city. Their width and high visibility were meant to discourage future revolutions by increasing the government's surveillance abilities and by making street barricades impractical. At the same time, they encouraged the promenading of the bourgeoisie and merchant class so that they could shop, socialize, and gain the healthful effects of the trees and fresh air.

At this time, the word 'Avenue' described a "tree-bordered approach to a country house" (Schlimmer, 2019). According to Schlimmer (2019), "No American had Avenue as his address

until after the founding of Washington D.C." The development of Washington D.C.'s mall and surrounding avenues led visitors to take home impressions of the city such as this one described by an article in the New York Times, the "vast labyrinth of leafing trees probably unequaled in extent, variety, and symmetry in any other city in the world. In a few years our capitol will become preeminently the Forest City of the Nation'", and by Harpers Magazine," The City of Washington, the capital of the nation, exceeds in beauty any city in the world…above all, magnificent trees make it without a peer…such is the effect of the wonderful growth of street trees. That to some extent presents the appearance of a city built in a forest" (Jonnes, 2017). Included in Washington's city forest were five varieties of Maples, American Elms, American and European Lindens, Tulip Trees, and various Poplars (Jonnes, 2017). Together, these influences caused tree-lined streets to take on new importance in urban areas throughout the country.

While the construction of Washington Park did not directly displace people, it fostered inequities of its own. Between 1869-1875 parcels for the park were purchased; because they were not purchased all at once but rather in pieces as the park was built, each subsequent purchase was more expensive than the last because the park improvements made surrounding property values appreciate (Waite et al., 1993). The lands around the park doubled in price during its development. In 1875 properties next to the park were valued at approximately $9,500, by 1891 they had appreciated to an average of $175,800 (Waite et. al., 1993). This caused massive property depreciation of the properties in Arbor Hill; depreciated and disconnected by the lack of trolley service, Arbor Hill began a steady decline in environmental quality (Waite et al., 1993) (Schlimmer, 2019; Kennedy, 1985).

The Albany Land Improvement and Building Company built, in tandem with the park, a new neighborhood for the elite to take advantage of the benefits of proximity to the pleasure grounds. They started developing what would become the Pine Hills neighborhood, what was then a relatively wild area. An ad wrote about the up-and-coming neighborhood, "About two miles west of the capitol, and miles beyond Washington Park, lie the extensive properties known as PINE HILLS… It is here that the two magnificent thoroughfares, Western and Madison Avenues, converge and here, with much of the rapidity, but none of the mushroom characteristics of a western city, a resident section is being developed…pure air, abundant shade, smooth lawns, asphalt pavements, perfect drainage, detached residents, rapid transit" (Schlimmer, 2019). Not only was this neighborhood proximal to the new park, but also boasted the most spacious residential lots the city had seen, as well as access to all the newest and most modern amenities. This is an early, and extreme, example of the power that urban parks and greenery have on property values and gentrification.

Meanwhile what is considered the first American art movement was blooming at The Hudson River School (Avery, 2004). Artists such as Thomas Cole and Frederick Edwin Church spent their time traveling and creating massive paintings that depicted sublime pastoral and wild vistas from across the ever-expanding country. Viewing parties were held for city people to gather and see the unveiling of these paintings that depicted scenes such as those of Niagara Falls, the Sierra and Catskill Mountains, and countless romantic images of the countryside along the Hudson River. Notably, these paintings depicted and idealized a view of nature as wild, sublime, and most of all, devoid of the influence and presence of people, namely Indigenous Peoples (Avery, 2004).

Part of what was turning nature from a frightening wilderness to an exciting place for adventure and recreation was the advancement of science in making nature more understandable (Bukowski, 2018). In 1866 German zoologist Ernst Haeckel first defined ecology, launching the field of studying the web of relationships between nature's organic and inorganic parts (Bukowski, 2018). An example that shows how our scientific understanding is still clouded by the settler-colonial mindsets of the time is the theory of ecological succession. Ecology textbooks today still depict ecological succession as the process by which an ecosystem develops from barren rock and sand to colonization by pioneer species such as mosses, herbs, and grass, to one of woody shrubs and young forest, and finally to mature forest— termed a climax community (BD Editors, 2019).

Note the similarities to the sequential and simultaneous agroforestry practiced by Indigenous groups. The difference is the theory of ecological succession promotes a worldview in which 'pioneer' species (called leader species by indigenous groups) colonize a landscape until it reaches its inevitable apogee of dense close-canopied forest— a parallel of manifest destiny in which settlers develop and improve the landscape, allowing it to recover from disturbance such as fire, until it reaches a peak ideal state (Abrams & Nowacki, 2008) (BD Editors, 2019). The land care practices I described at the beginning of this chapter treat disturbance and forest maturation as a part of a necessary cycle, a cycle in which humans play an important part. In a cycle there is no idealized end state; settler land management has seen to the development of more close-canopied forests, but has yet to reach a pinnacle, and in fact our managed forests have faced many dysfunctions as a consequence of too little disturbance (Abrams & Nowacki, 2008). This can be seen in the devastating wildfires in the American West:

fires that are a result of too many years of letting dry brush pile up in the name of conservation (Shogren, 2017).

Eventually, advocacy by macho explorers like Henry David Thoreau, John Muir, and Teddy Roosevelt, and artists and writers such as those of the Hudson River School and Henry David Thoreau, led to the creation of Yellowstone National Park (Jonnes, 2017). The park was established by President Theodore Roosevelt in 1872, creating the first of many jewels in the National Park System to be cleared of Indigenous Peoples and set aside for recreational visits by Americans wealthy enough to do so. This was one of the first capital investments in nature for nature's sake and exemplified the changing attitudes of a public that was starting to view nature, not just as beautiful and recreational, but also as virtuous (Jonnes, 2017).

That same year marked the first official celebration of Arbor Day in Nebraska. J. Sterling Morton— pioneer, farmer, slavery advocate, and father to the founders of the Morton Salt Company— "dreamed up Arbor Day in Nebraska as a practical celebration to encourage settlers to improve the state's economy by creating woods and fruit orchards on the treeless plains" (Jonnes, 2017). A decade later at the first conference of the American Forestry Association— the first civic conservation organization in the United States— pushed for a national Arbor Day to encourage the "beautifying by streets of every city, town, and village, as well as the public highways, church, and school grounds, and the homes of the people" (Jonnes, 2017).

A New Century and a Modernizing City

The turn of the 20th century brought several large developments that shaped our cities, technology-wise this included, namely the proliferation of motor vehicles, electricity, and sewer

and complicated water systems (Bukowski, 2018; Jonnes, 2017; Schlimmer, 2019). By this time about one third of the US population lived in cities where they took advantage of modern utilities, social networks, jobs, and entertainment (Davenport, 1989). The takeover of cars, a process which was mostly complete by the end of the first decade of the 20th century, majorly changed the ways that we used and designed city streets (Schlimmer, 2019). Previously the streets were used as sort of public squares where children played, and people bought and sold things and socialized. When cars took over, streets became too dangerous for pedestrians, who subsequently lost this public space. As people moved off the streets the shade and air quality effects of trees declined in importance, leading to a dampening of public sentiment towards tree planting. Additionally, the widening of streets and installation of sewers, water lines, and phone and power lines led to the damage and removal of many city trees (Jonnes, 2017).

Before the decline of horses as a means of transportation and the adoption of sewers and garbage services, much of the streets were filled with human and animal waste as well as garbage (Jonnes, 2017) (Kennedy, 1985). At that point it was common for people to raise livestock in the city, namely pigs, which were let loose to feed on the garbage in the streets (Bukowski, 2018) (Kennedy, 1985). In 1849 someone complained to Albany's Common Council about the pigs that were "running the streets at large, numbering 4,000"; after warnings, the city not long after corralled close to 15,000 pigs (Kennedy, 1985). Following the lead of many other cities, as Albany developed and cleaned up their streets, they banned the raising of livestock within the city limits. (Kennedy, 1985) While these developments had health benefits, they also had the unfortunate side effect of taking away what was probably the only opportunity for meat, eggs, and dairy that many of the poor had (Bukowski, 2018).

1904 saw the beginning of a massive change in forests across the country, urban and rural. That year the chief forester of the Bronx Zoo noticed several local Chestnut trees were getting sick and dying (Jonnes, 2017). Upon investigation the cause was found to be a fungus, later dubbed Chestnut blight. By many estimates American Chestnuts were assumed to be the most valuable trees in the country for their esteemed wood, food crops, and as a good source of shade (Jonnes, 2017). Thoreau reported that New York City had more chestnut trees than many other places he had seen. Going 'chestnutting' was a popular fall time activity where families and individuals would go out in parties gathering ripe chestnuts everywhere they went (Jonnes, 2017). In the Appalachians of upstate New York, chestnuts were the most common tree and an integral part of the local economy for their lumber and nuts.

Officials made attempts to contain the blight by cutting down infected trees and establishing quarantine zones, but experts soon realized that the spread of blight spores by wind made the disease uncontainable; they started to raise alarm that this was an epidemic that was fated to run its course. However, public officials were not ready to see this ecodisaster unfold. In 1910 Pennsylvania procured $275,000 in funding (worth approximately $6 million today) to cut down millions of chestnut trees to establish a quarantine zone protecting the rest of their forests (Jonnes, 2017). The New York State Agriculture Commissioner supported this action, saying that it was not American to just give up. Against scientific recommendations, twenty-two eastern states signed on to join Pennsylvania's plan. Even after millions of dollars were spent over several decades, the United States lost billions of chestnut trees (Jonnes, 2017). Losing their favorite tree was devastating to Americans and changed the landscape of the United States' wild and urban forests forever.

Socially, one of the biggest developments was the Great Migration. The end of the Civil War may have been the end of chattel slavery in the United States, but it was far from the end of social and economic oppression of black people (Lemak, 2015). Slavery was replaced with sharecropping, convict labor, and debt bondage. Sharecroppers were landless farmers who rented land and farming supplies and bought their household needs from landowners on credit (Lemak, 2015). They were beholden to give all their crops to the landholder at the end of the season, which was hardly ever enough to get and stay out of debt. These folks would often stay indebted to landholders who would then sell that debt to others, leaving little room for escape from that lifestyle of labor and indebtedness. Often if a tenant tried to leave their farm before the harvest or to escape this debt they were hunted down and apprehended (Lemak, 2015).

Other forms of labor were based on similar models, such as turpentine camps (Glave & Stoll, 2005). Turpentine was another pine-derived substance used in the shipbuilding industry. Once the pine forests in the Northeast were depleted, turpentining moved South. According to Glave & Stoll (2005), "Turpentine employment trailed only cotton and timber production in the number of wage earners employed between 1880 and 1930 and accounted for 6 percent of all wage earners in the South in 1900" with African Americans making up approximately 80% of this workforce well into the 20th century. This industry was particularly abusive as the work occurred in remote pinelands. Like sharecroppers, turpentiners usually found themselves indebted, not to farmland owners, but to their companies. Usually, they would be paid primarily in company currency which could only be used to purchase food, clothes, and other necessities at the company store; often their low wages did not cover their needs and so they were held to their labor by debt (Glave & Stoll, 2005).

There was no political recourse, for laws and fees made it difficult to vote, and the law enforcement and judicial system made it easy for them to be arrested and imprisoned for arbitrary crimes (Lemak, 2015). For example, laws against 'vagrancy' "essentially made it illegal for males over eighteen to be unemployed" (Glave & Stoll, 2005). Prisoners were then conscripted to do free manual labor. On top of it all, black southerners faced constant threats of violence and intimidation, such as lynching. According to Lemak (2015), "Southern blacks, both men and women, were lynched for owning property, voting, testifying in court against a white person, and failing to express deference to whites". In the fifty-year period from 1882 to 1962, there were a total of 3,442 lynchings in the United State— an average of one per week for fifty years (Lemak, 2015).

Black Southerners looked to the North for salvation. Not only was slavery outlawed in the North earlier than elsewhere, but it was also the hub of abolitionist activity; several black people who already existed or found their way to the North prior to the 20th century had found relative levels of prosperity and upward mobility (Lemak, 2008) (Lemak, 2015). With the beginning of World War I, the flow of European immigrants was stemmed. This left northern manufacturing businesses in need of labor. By the end of the war, it is estimated that 400,000 manufacturing jobs were filled in the North by black folks (Lemak, 2015). Increased numbers of jobs and higher wages were a pulling factor, while economic setbacks from boll weevil infestations and floods in the first part of the century provided a pushing factor. These forces prompted waves of Northward migration of black southerners— often done in secret and with the help of Northern friends and family (Lemak, 2008) (Lemak, 2015).

Before and after slavery it was common for rural folks, including black people to supplement their income and diet with foods gained from hunting, fishing, and foraging on

unoccupied land (Linneken, 2018). The Jim Crow era prompted a wave of laws intended to

discourage this and the self-sufficiency and self-determination it offered its practitioners. If

sharecroppers were able to obtain money and food from these efforts, they were less tied to their

debt and plantation work. This gave rise to criminal trespassing laws (Linneken, 2018). Prior to

this, through most of the country it was common practice for people to hunt, fish, and forage on

others' private property whether it was fenced in or not, in many places this was even protected

by law, as it was seen as an American freedom. Immediately after the Civil War, six states

moved to enact anti-trespassing laws with strict penalties, by the mid-1900s this was common

practice (Linneken, 2018). In the North the conservation movement, which sought to protect

forested lands from human influence, also lent to this kind of legislation; in New York's

Appalachian Mountains this was disastrous to rural subsistence farmers of all races who were not

trusted by the elite to responsibly manage the land. The legacy of these laws still impacts the

ability of people to eat wild foods today, even where they exist in abundance (Linneken, 2018).

In the 1920s the city of Albany established a planning commission that oversaw the

coming spate of construction projects. Projects included improving highways, extending city

streets and other infrastructure into the developing suburban neighborhoods, dredging the

Hudson, and establishing the Port of Albany, and building the Dunn Memorial Bridge. These

jobs as well as Albany's proximity to brickmaking jobs and network of transportation to nearby

summer resort jobs proved to be attractive to black migrants, although this did not mean that

work was easy to come by for them (Lemak, 2008) (Lemak, 2015).

In some larger cities like New York and Chicago there was a large enough black

population to elect black politicians and to support black-owned institutions like shops and

insurance companies (Lemak, 2015). While there was a smattering of black-owned businesses in

Albany, there were not enough black residents to secure broader economic and political power (Lemak, 2015). At the beginning of the 20th century, black people made up less than 2% of Albany's population. Over the next several decades the black community experienced a fast rate of growth— nearly doubling from 1,239 people in 1920 to 2,100 people in 1930. By 1970 this steady growth led to black residents making up 12.9% of Albany's population (Lemak, 2008) (Lemak, 2015). At this point in time the South End had a sizable population of Jewish, Irish, and Italian residents as well, but by the fifties the area was almost entirely occupied by black residents. "If the trajectory of upward and outward social and geographical movement is identified as an intrinsic "immigrant" phenomenon, then institutional factors in the market structure, in the political system, and in the cultural realm did not allow blacks to be immigrants" (Spain et al., 1988).

Albany's South End neighborhood, as one of the oldest, lowest lying, polluted, and thus cheapest part of Albany, was the welcoming place for all forms of immigrants and migrants until the mid-20th century (Lemak, 2008) (Lemak, 2015) (Kennedy, 1985). Most black migrants from the Great Migration first came to live in the South End. In the face of this increased crowding, many of Albany's long-established and upwardly mobile black citizens moved to Arbor Hill where they established neighborhood associations and served as liaisons between the black and white communities (Kennedy, 1985) (Lemak, 2008) (Lemak, 2015).

According to Lemak (2008) and Lemak (2015), a 1928 study conducted by the National Urban League reported that the areas where factories and businesses made the most headway were simultaneously the overall least populated areas and the areas with the highest proportion of black residents (Lemak, 2008) (Lemak, 2015). This study reported poor living conditions in these areas where residents complained of having to pay high rents while landlords neglected

repairs necessary for well-being. Unfortunately, black migrants, no matter their economic well-being, had little choice besides renting these rundown and expensive dwellings as racist policies and a quickly crowding city limited their options for renting elsewhere or outright purchasing of homes. According to residents Geneva Conway and Leon Dukes, the only real estate company that would serve black residents was Albert & Kersh Realty (Lemak, 2008; Lemak, 2015) while the only bank willing to provide mortgages to black residents was Cohoes Savings Bank. James Stamper, a 1930 migrant from Atlanta, Georgia described his experience of trying to find housing as severely disappointing, but typical for others in his situation (Lemak, 2008; Lemak, 2015). In Atlanta he lived in a 10-bedroom house built by his father, but upon arriving in the Capitol District he reports his family having difficulty finding any kind of decent housing that they could afford. They ended up staying with an uncle initially, spending years finding decent rental housing, and finally achieving home ownership 20 years later. Notably, "despite the hardships of trying to find adequate housing in the North, Stamper claims that living conditions for African Americans were better in Schenectady, on the whole, than they were in Atlanta" (Lemak, 2008).

A notable exception to this trend is the case of the Rapp Road community. Around 1927, the preacher Louis W. Parson and his wife Frances Parson moved to Albany from Shubuta, Mississippi (Lemak, 2015). Upon arrival he established the First Church of God in Christ in the South End. Between 1927 and his death in 1940 he traveled back to Shubuta on a number of occasions to bring back members of his congregation and a few others who heard the news of this movement. Often, he would pick people up early on a Sunday morning because tenant farmers' landowners and creditors assumed that they would be at church all day anyways. On these trips he would pick up to seventeen people at a time and would bring a large amount of

food to get everyone through the journey due to the lack of service from restaurants. At one point Albany authorities even arrested Parson for a short while for bringing so many people to Albany who needed money, jobs, and houses that were in short supply. A member of his congregation, Jack Johnson, later helped with this work and between 1937 and 1957 was responsible for helping move over one hundred people to Albany (Lemak, 2015).

Many of these migrants ended up settling in the South End where their church and social network helped people get jobs and support each other (Lemak, 2015). While thankful to be free of the South, the South End still proved largely unappealing. The rural and church-minded migrants did not feel comfortable in the South End because at the time it was the heart of Albany's red light and gambling district (Lemak, 2015; Kennedy, 1985). Additionally, they missed the rural environment and disliked having to buy all their food from the store. In the 1930s, to alleviate these discontents, Elder Parson and church member William Toliver purchased nearly thirty acres of land in what was still pine bush west of the city, surrounded by only a few farms (Lemak, 2015). Over several years they sold tracts of land to community members on a pay-as-you-go system, where neighbors then worked together to clear the land and build southern-style homes from the local timber. The lane that the community developed around became known as Rapp Road (Lemak, 2015).

Interestingly, the landscape of Albany's pine bush is remarkably similar to that of Shubuta: Shubuta is also filled with pines and sandy substrate from being located on the banks of the Chickasawhay River (Lemak, 2015). Once they moved to Rapp Road community members hunted for wild game, gathered food (such as pears), grew crops, and raised livestock. Crops included corn, cucumbers, collard greens, watermelons, potatoes, tomatoes, and other vegetables; the livestock raised included pigs, chickens, cows, goats, and turkeys. They used their southern

agricultural knowledge to produce and obtain these foods as well as to preserve them, such as by

canning fruits and vegetables and curing meat. Because they were largely self-sufficient and

lived so far in the country, they were more or less free from having to deal with racism except for

visits to town— most Albanians did not even know that they were living out there. Shubuta

migrants who stayed in the South End, either permanently or until their houses were built, paid

visits to Rapp Road. A Rapp Road community member describes his experience of visiting from

the South End when he was a youth,

> …[I]it was always like country, not asphalt, not sidewalks, not city dwelling. When we said 'let's go to the country,' we only meant Rapp Road. The country to us implied we went where we could run and jump and play and [had] plenty to eat and land and it's not streets. Not a lot of street lights. We were back home in Shubuta…back in the country, it was always a joy and a pleasure trip if we ever went to the country (Lemak, 2015)

The Rapp Road Community is a testament to the power of food sovereignty, obtained

from an environment of abundance and health for achieving self-determination and building

resilient communities. This later helped the residents of Rapp Road resist development imposed

by Albany's politically and economically powerful (Lemak, 2015).

City Expansion and Economic Contraction

Elsewhere in Albany, neighborhoods for the affluent were being built more and more Westward,

primarily following Western Ave out into the countryside (Schlimmer, 2019). One of the first

developments to go up was in the Academy Road area; when Academy Road was built the

developers planted Eastern White Pines to demarcate the Northern line of the property— trees

that still stand today almost one hundred years later. In the roughly 20-year period before the

onset of the Great Depression when construction largely halted, land and was conveyed for the

building of:

Berkshire Blvd., Colonie St., Beverly Ave., Mcardle Ave., Pennsylvania Ave., Wilkins Ave., Thornton St. Extension, Barnet St., Oakwood St. Maplewood St., Erie St., Parkwood St., Glenwood St., Fairview Ave., Edison Ave., Hawthorne Ave., Edgewood Ave., Fairlawn Ave., Homestead Ave., Laurel Ave., Melrose Ave., Terrace Ave., Arcadia Ave., Briar Ave., Sparkill Ave., Bower Ave., Caldwell St., Cliff St., Hart St., Twitchell St., Webster St., Winnie St., Albion Ave., New Scotland Ave., Academy Rd., Freeman Rd., Bogardus Rd., Greenway St., Halsdorf St., Kakely St., Linden Rd., Sunset Ave., Miller Ave., Cottage Ave., Edinburgh Ave., Hazelhurst Ave., Hillcrest Ave., Pleasantview Ave., Russell Rd., Summit Ave., Taft Ave., Villa Ave., Wellington Ave., Clayton Pl., Betwood St., Joelson Ct., Home Ave., Daytona Ave., Cardinal St., Fleetwood Ave., Van Schoick Ave., Collins Pl., Dartmouth St., Kelton Ct., Pariette Pl., Pansy St., Lily St., Silas Ave., Elmo Rd., Eva Ave., Frost Place., Edward Terrace, Lindburgh Ave., and Marwill St., (Schlimmer, 2019).

 just to name a few.

Advertisements for the new developments boasted pure air, open space, nice views, and

lush landscaping that was beneficial aesthetically and for the purposes of gardening and fruit

cultivation, and for health. For example, the Buckingham Garden development advertised

"plenty of fruit trees and soil for flowers", while an ad for the Magnolia Terrace development

read, "The new boulevard is being laid extra wide, thereby insuring lots of air which is the purest

in Albany coming direct from Helderbergs, which are plainly visible. All large lots, spacious

center plush grass, boulevard set out with white and pink magnolia trees and flower beds"

(Schlimmer, 2019). It is notable how many of these new streets carried the distinction of being

an Avenue-- recall that the word Avenue is derived from the French word that described a "tree-

bordered approach to a country house".

This was a popular time for trees at large. After WWI, the American Forestry Association

popularized the idea of using Arbor Day to plant memorial trees to commemorate individuals

lost during the war (Jonnes, 2017). Out of this came the "Roads of Remembrance" program that

encouraged the planting of shade trees along miles of city avenues. This led to a previously unmatched level of community tree planting, with people saying things such as "Tree-lined byways were one of the useful and beautiful ideas which our soldiers brought back from France", and "…the trees will mark the remaking of the cities just as those men marked the remaking of the world" (Jonnes, 2017). This is around the time that the field of Arboriculture— "the commercial care of trees in and around cities"— really coalesced as a profession (Jonnes, 2017).

In 1921 Democrats took control of Albany's city government after a scandal in which South End residents railed against the Republican administration for billing the city for $18,000 of coal but failing to deliver it to non-Republicans (Kennedy, 1985). This was the beginning of Albany's Democratic machine; today Albany carries the distinction of being the city with the longest uninterrupted rule by the Democratic Party. For much of this time the party stayed in power through patronage and cronyism in which supporters of the party were rewarded with more favorable tax assessments, charitable donations, government jobs, and even $5 at the voting booth for voting Democrat (Kennedy, 1985). Because of its role as the state capital, government employment helped Albany get by somewhat better than many other comparable cities. Total wages fell by more than 27%, but the city gave fuel, food, and rent aid to over 2,200 families (Davenport, 1989). To counter the economic stagnation the city commissioned public works projects, culminating in the building of the Philip Livingston School, two reservoirs, and 144 miles of paved streets (Davenport, 1989). The lean times only made employment discrimination worse, causing black unemployment to peak at 25% (Lemak, 2008).

In 1933 a beetle was found in a wood shipment in Baltimore (Jonnes, 2017). Later that year people were finding dying elms across New Jersey, New York City, and Westchester County. Eventually a study determined that as early as 1926 logs infected with Dutch Elm

Disease (DED) and the associated beetle vectors had made their way through at least four ports and sixteen railroads (Jonnes, 2017). Elms were the top choice for urban and suburban shade trees. They were the ideal tree for modernizing cities because they were stately and beautiful, their tall crown branched high above traffic, their split trunks allowed for power and phone lines to pass through, they provided incredible shade, and they were hardy to poor soil and the disturbances of urban life (Jonnes, 2017).

After the chestnut debacle, many argued that it would be wasteful to spend money on combating this disease in the economic climate of the Great Depression (Jonnes, 2017). Despite this reasoning, conservation groups, municipalities, and concerned citizens eventually secured money at all levels of government to try and fight the disease. Some argued for the federal government to keep spending on control efforts even as the second world war came on, reasoning that even a season without control efforts could lose us the battle, but in 1941 the federal government quietly reduced the budget for DED control, rendering it ineffective (Jonnes, 2017). Because the disease relied on the beetle vector and was not able to spread via wind in the same way that the Chestnut Blight did, it did not wreak wholesale destruction, but for the next several decades it maintained a steady march, killing millions of elms throughout the country every year. Efforts to eradicate DED catalyzed the "significant expansion of arborist services to cities, towns, institutions, and homes" (Jonnes, 2017).

During the war, citizens mobilized to plant over 20 million victory gardens to buttress food security (Bukowski, 2018). But this was short lived as it "Linked production in urban areas to values associated with overcoming social and economic strife and national pride during crises. This reinforced the pattern that once national obstacles were overcome, gardens were abandoned as a way of putting tough times behind and symbolizing forward progress" (Bukowski, 2018).

By the end of the war Albany's economy had mostly transitioned from one based primarily on agriculture and manufacturing, to one based on nonprofit, production, and government jobs (Rabrenovic, 1996). Industrial facilities were replaced by "corporate headquarters, and office buildings, by research and development facilities, distribution centers, commercial and investment banks, or accounts-processing centers" (Rabrenovic, 1996).

Suburban development picked up again, this time spurred on by federal programs that promoted things such as highway construction and mortgage assistance. Nationwide homeownership increased from 43% to 62% by 1960 (Rabrenovic, 1996). Unfortunately, not everyone shared these benefits equally. During the 1930s the Homeowners Loan Corporation (HOLC) devised maps of cities across the country in which neighborhoods were ranked by investment risk as determined by their location, age, and most significantly, their level of 'infiltration by undesirable populations' (Rabrenovic, 1996; *Mapping Inequality*, n.d.). At the time 'undesirable populations' included laborers, foreigners (particularly of Eastern and Southern European descent), black and Jewish people, as well as people on government assistance (*Mapping Inequality*, n.d.). Areas that were marked as green were 'best' for investment, blue 'still desirable', yellow 'definitely declining', and red 'hazardous. This was based on a theory of the time that urban development followed a linear trajectory towards decay, so it was pointless to invest in declining areas (Rabrenovic, 1996; *Mapping Inequality*, n.d.;). These maps perpetuated segregation and a racial gap in homeownership rates by connecting race, class, and property values. These rankings influenced where federal housing funds went and made it difficult for homeowners in poorly rated areas to obtain loans for mortgages or home improvements (Rabrenovic, 1996; *Mapping Inequality*, n.d.). Those with upward mobility in the low-rated areas found it easier to move than to try and repair their homes, many of them

understandably left, but further condemned their old neighborhoods to disinvestment and decay (Rabrenovic, 1996).

At one point, Mayor Erastus Corning, 2nd, announced plans for urban renewal through the South End Project, intended to use federal funding to "clear away old and abandoned buildings, improve the condition and size of downtown streets, provide parking garages for commuter traffic, and construct a modern hotel and shopping center downtown" (Rabrenovic, 1996). However, this never went through and the city instead turned away from the downtown area and focused their energy on supporting outward development. During the 50s and 60s development rapidly swallowed up Albany's pine bush (Schlimmer, 2019). The Dunes neighborhood in the Western extent of Albany was built with street names such as Coral Berry Circle, Gray Fox Lane, Hawthorn Circle, Lupine Circle, Pitch Pine Road, Sparrow Hill, Warbler Way, and West Meadow Drive— all named for components of the ecosystem that ironically was paved over (Schlimmer, 2019). Other neighborhoods sported nature-themed street names that did not necessarily reflect their location but appealed to the preferences that valued proximity to the bucolic and scenic (Schlimmer, 2019).

At the same time, highway projects contributed to further fragmentation of habitat as well as human communities. Interstate 90 cut through the predominantly Irish neighborhoods, displacing seventy families; while the NYS Thruway did not bisect the Rapp Road community, it came close enough to attract development and attention to the community for the first time (Kennedy, 1985; Lemak, 2015). A newspaper article from 1950 illustrates the general attitude towards the wild environment of the pine bush: the article titled, "Wilderness within a City, Thruway May Reopen Pine Bush, Forbidden Wasteland within a Few Miles of Albany and Schenectady May Be Opened to Development by New Highway", further said, "The Thruway

will bisect the Pine Bush, but its traffic will be express…there will be no entrances or exits through this wasteland. Nevertheless, the Thruway may have an influence on opening the desolate tract to civilization, and perhaps even to real estate development" (Lemak, 2015).

It was not only people's homes that moved out of town, but also commerce and jobs. Malls and department stores proliferated in the suburbs— luring shoppers away from downtown shops for the novelty of 'night shopping' (Schlimmer, 2019). In the late 1950s Governor W. Averell Harriman put plans into motion to move thousands of state workers from downtown to a campus in the developing pine bush (Kennedy, 1985; Schlimmer, 2019). By the 1970s, a change in development paradigms made this campus all but moot. In 1997, Assemblyman Jack Mceneny said of the campus, "The only thing the campus offered were no taxes, air pollution, and traffic… [it was] one of the worst examples of 1950s planning, the type of planning that killed cities" (Schlimmer, 2019). The campus remained gutted and unused until Governor Cuomo released plans to try and rehabilitate it decades later (Schlimmer, 2019).

From the 1950s to the 1970s, agricultural developments like high-yielding GMO crops, synthetic fertilizers and pesticides, and increased mechanization, led to a massive change in food production paradigms worldwide, since dubbed the 'Green Revolutions' (Briney, 2020). Now that farmers had to purchase external inputs many of them went into debts and lost their farms. Farms consolidated, leading to industrial agriculture and the growth of massive amounts of commodity crops, like corn, wheat, and soy. (Briney, 2020). In 1950 around 15% of the United States population was employed in agriculture, in 2000 less than 1% of the population was employed in agriculture (United States Department of Agriculture, 2020). Contrary to what you might intuit, we do not grow large amounts of these crops to make most of our commercial foods like cereals, chips, and other pre-packaged or fast foods: these foods were created to find outlets

for the huge amounts of commodity crops that were being grown and subsidized (Salatin, 2011).

Farmers moved to urban and suburban areas while suburban kitchens and kitchen gadgets flew

out of the department store magazines, and "America's food culture largely became one of

expectation and preference for ease and assortment" (Bukowski, 2018).

With a new interstate highway system, more disposable income, and time freed by

convenience foods, the popularity of traveling to national parks and other places of outdoor

recreation became more popular with the growing middle-class (Bukowski, 2018). While the

urban landscape decayed, the public's main environmental concerns focused on "a separate

nature that was far away, pure, and needed protection" (Bukowski, 2018; Jonnes, 2017).

Although with more of a science-based ecological bent, attitudes towards nature mirrored those

of the pleasure-grounds era, in that nature is something to be passively enjoyed for recreation and

beauty, but not impacted by people. (PBPC) (Bukowski et al., 2018).

Consequences of an Economic Paradigm Shift

Albany's population reached its lowest point in 1960 (Rabrenovic, 1996). The story— or more

like, the urban legend— goes: In 1960, Republican Governor Nelson Rockefeller gave a tour of

Albany to Princess Beatrix of the Netherlands (Kennedy, 1985; Rabrenovic, 1996). Upon

passing through the South End on their way to the executive mansion, Rockefeller became

embarrassed by the physical conditions of the neighborhood and what the dignitary must think of

the Dutch-heritage city. In 1961, Governor Rockefeller and the Albany Legislature established a

temporary commission with the purpose of rehabilitating the city so that it may be "a capital city

in which not only its residents but the entire Empire State can take proper pride" (98 Acres in

Albany: 40 Blocks, Thousands of Stories, n.d.). Later that year the commission concluded that

the city should promote R&D in Rensselaer and also bring state governance operations back to

the city center (Rabrenovic, 1996). Construction on the Harriman campus on Western Ave

stopped and plans went ahead for a grand state plaza in Albany's downtown (*98 Acres in Albany:*

40 Blocks, Thousands of Stories, n.d.). The next year the commission determined the state

complex would be built on a 98-acre tract to be appropriated in the center of the city. Mayor

Erastus Corning 2nd took the state to court over this decision saying he would "do all in my

power to protect the people of Albany, those in the area planned to be taken from being driven

from their homes, and the rest from serious economic loss" (*98 Acres in Albany: 40 Blocks,*

Thousands of Stories, n.d.). The court decided in the State's favor, a decision that the city did not

appeal. Allegedly, in the design process Rockefeller and the plaza's architect flew over Albany

and looking down at the favorable location of the 98 acres, he sketched his visions for the

Empire State Plaza on the back of an envelope— the ultimate in top-down governance.

Demolition began by that summer (*98 Acres in Albany: 40 Blocks, Thousands of Stories*, n.d.).

The area to be turned into the Empire State Plaza (also termed the South Mall) contained

over 400 businesses, 1,150 structures, and 3,300 households (*98 Acres in Albany: 40 Blocks,*

Thousands of Stories, n.d.). This massive loss of housing led to overcrowded and high-priced

conditions in the surrounding neighborhoods. By 1965, amid funding uncertainty and

construction delays, people started getting restless about the mall's timeline. Some alternative

ideas for using the open dirt space left by the demolitions demonstrate the popularity of urban

food production that was once again rising around that time, with some people suggesting uses

such as growing celery, creating rice paddies, or letting Ag-and-Markets use it to experiment

with growing okra and alpacas. Alas, by the middle of the year the state government and Albany

county devised a funding scheme and construction began, starting the process to turn Albany into "one of the most brilliant, beautiful, efficient, and electrifying capitals in all the world" (*98 Acres in Albany: 40 Blocks, Thousands of Stories*, n.d.). In addition to the plaza, interstate 787 and an arterial connecting it to downtown were constructed. This cut off the whole river city's access to the waterfront and boxed the South End in, cutting it off from the rest of the city (Schlimmer, 2019;*98 Acres in Albany: 40 Blocks, Thousands of Stories*, n.d.).

Nationwide, the 60s were a time where "nature's fragility was witnessed on multiple accounts while social resilience was being tested through counterculture activism spanning anti-poverty measures, food production and distribution, the Vietnam War, and the civil rights movement" (Bukowski, 2018).

Coinciding with these events, was the terminus of the still unfolding eco-disaster that was the loss of America's elm trees (Jonnes, 2017). By 1969 the federal budget for Dutch Elm Disease efforts was less than $170,000, which according to one forestry official was "not enough to even take down 850 elms at the price of $200 each" (Jonnes, 2017). After the decline in federal funding and major budget expenditures in the effort to eradicate Dutch Elm Disease, cities mostly gave up the fight; some cities struggled to even procure the funds for removal of dead and dying trees, much less for new plantings— particularly for otherwise-neglected neighborhoods (Jonnes, 2017).

Watching this unfold, citizens felt helpless and devastated. Jonnes (2017) recounts the feelings described by one man about his neighborhood's environment both before and after the removal of the elms, "When you came to any town the landscape changed. You entered this kind of forest with 100-foot arches. The shadows changed. Everything seemed very reverent, there was a certain serenity, a certain calmness" as elms came down "you started to notice the severity

of things—the wires and utility poles, the cracks in the hot pavement, which no longer was bathed in the shadows", "an ethereal beauty was giving way to a graceless, even ugly reality". Reading people's recollections, it is striking how much this landscape and social change seems to be inextricable in the civic psyche.

In 1982 Albany journalist and novelist, William Kennedy, wrote a social history of Albany's neighborhoods by consulting historical documents and conducting interviews. When talking about Albany's downtown neighborhoods, he weaves a narrative of decline from eminence to poverty and dilapidation of the neighborhoods, "Not until the 1960s would Arbor Hill be truly ghettoized, inheriting from the exploded South End the dubious superlative of being the city's worst slum" (Kennedy, 1985). He interviewed a resident from Arbor Hill about her memories of the neighborhood before it declined and she recalled it fondly as "a beautiful section [of town], streets lined with elms and chestnuts, even narrow Third Street" (Kennedy, 1985). Later, he interviewed Leon Van Dyke, a man who in the 1960s had been a part of the influential Albany civil rights group, the Black Brothers. Together they walked through the Arbor Hill neighborhood. Kennedy interweaves stories about Albany's civil rights movement and his disparaging observations about the current neighborhood. At one point a man came across the street to talk with Leon and "reminisced about the Arbor Hill of his childhood", "People cared…then they cut down all our trees and blacktopped our sidewalks"(Kennedy, 1985). This leads into a dialog about the place's broken and cracked infrastructure, garbage, problems with drugs and gun violence, as well as the "decay in spirit" of its residents. Kennedy attributes downtown's decline not only to suburbanization but also because "people feared black violence". He recalls a "mini-riot" on Pearl Street in 1967 as well as the close of the Palace Theater because of a "racial killing of a white youth there in 1969" (Kennedy, 1985).

Another interview of Leon Van Dyke about the Black Brothers reveals a disconnect in narratives about this time, one that is eerily similar to current competing narratives about police and protests. Leon recounts how tensions were high in Albany for many of the same reasons they were everywhere: discrimination, police brutality, and disinvestment (Rivest, 2016). In Albany that summer he says, "The police almost hit a woman pushing a baby carriage, and that was the spark. People reacted. Young men started yelling. You could feel it coming" (Rivest, 2016). To get ahead of it and to not have their protests branded as riots, and to prevent harm from police retaliation, he and other members of the community acted as mentors to the youth, encouraging peaceful resistance. He speaks. "There was no riot that night, or anytime during the summer of 1967…we were accused of trying to incite them, which was crazy" (Rivest, 2016).

Kennedy (1985) ends the chapter by extolling the virtues of urban renewal, saying a friend of his was happy about the superhighways around the city because with them he could go downtown without having to pass through Arbor Hill. To Kennedy, "This whole urban-renewal thrust was a major upgrading, and improved the quality of life for thousands", and that the only positive thing about Arbor Hill in the 80s was that it was in the process of gentrifying (Kennedy, 1985). The last lines of the chapter read, "…every new fire that brings in the bulldozer, every evacuation of a low-income family to make way for another rehabber, looks very like a quixotic design of the Urban Fates to purge Arbor Hill of poverty and *to restore the sunny and tree-lined garden that existed when the world was young and beautiful*" (Kennedy, 1985).

The loss of elms as well as urban renewal trends created a massive surge in public interest in city trees, however trees were not for everyone (Jonnes, 2017). The disproportionate replanting of trees had as much to do with budget as it did with a culture of fear regarding inner-city residents of color. In the 1970s, New York City, like many other cities of the time, was

struggling with economic restructuring and budget shortfalls (Reporter, 2020). In a form of protest against the city having to institute layoffs and pay cuts, the city's Law Enforcement and Firefighter Unions started anonymously handing out official looking pamphlets called "WELCOME TO FEAR CITY: A Survival Guide for Visitors to The City of New York" (Reporter, 2020). The guide featured exaggerated crime statistics, critiques of the mayor's cuts to the fire and law enforcement agencies, and a recommendation to either not visit the city or to take over-the-top precautions such as not going outside after 6 pm. This further threatened NYC's tourism industry and fiscal situation, resulting in not only reinstatement but also increased capacity of fire and law enforcement (Reporter, 2020).

Inspired by theories of the time about how urban space can be used to either invite or discourage crime, NYC adopted "broken-windows policing" (Fagan & Davies, 2001). The assumption was that even tiny signs of disorder, like a broken window, will escalate to more and worse crimes. This justified more overt and aggressive policing of minor crimes that could be construed as 'disorder', especially ones that were proscribed by vague and/or arbitrary laws, such as charges of loitering, disorderly conduct, jumping subway turnstiles, etc. (I think it is notable how similar the "crimes" and policing of loitering and vagrancy were in the earlier 20th century; Fagan & Davies, 2001).

It also justified more indirect forms of control, primarily through urban design (Braverman, 2008; Fagan & Davies, 2001). The theory about 'Defensible Space' recommended not only reducing signs of disorder, but also maintaining clear sightlines to enhance community surveillance. Theories abound about the roles of trees in all of this (Braverman, 2008). White society has long considered trees as accessories to crime. From fears of trees as "shelter for the savage Indian", armed and waiting to launch a surprise attack, to fears about trees offering

concealed spaces for the selling and use of drugs, trees have long been expected to harbor

dangers and illicit activities (Braverman, 2008;Fagan & Davies, 2001;Jonnes, 2017). The more

closed in, dense, and 'wild' looking the vegetation the more it promotes disorder (Braverman,

2008). Unlike the towering open-air elms, most other street trees disrupted lines of sight on the

street, which made it more difficult for community members and police officers to monitor and

act on criminal activity. "Human fear of untamed nature is thus projected onto the single tree,

which in turn threatens what people perceive as their safe space" (Braverman, 2008).

A study done by Boone et. al. (2009) demonstrated that most of our current urban tree-

scapes have been inherited from the 1960s. They found that "1960 demographics and age of

housing are better predictors of high woody or tree coverage in 1999 than demographics and

housing characteristics from 2000", whereas the opposite was true for shorter-lived herbaceous

cover, like lawns (Boone et. al., 2009).

The 1970s and 1980s oversaw significant changes in Albany's economic and physical

environment. Nationwide, the process of industrial abandonment and transition to service-based

economies was nearly complete (Rabrenovic, 1996). In general, service industries require fewer

jobs, most of which are professional positions that require post-secondary education, or are low-

paying jobs, such as those involving cleaning and serving. In contrast to the manufacturing

industry whose facilities are set in place, service-oriented businesses have more political

leverage because leaving a particular city is as easy as changing operations from one corporate

building to another, thus reducing bargaining-power of unions and local governments for

workers' rights (Rabrenovic, 1996). Additionally, organizations that are run by distant

headquarters are less responsive to local issues. For areas with high concentrations of non-

professionals, lower incomes caused a reduction in the tax base, and as a result less political

responsiveness and fewer and poorer quality public services. This hit inner city areas the hardest as suburban expansion had already been draining their tax bases. Meanwhile the federal government adopted a stance eschewing government spending and support for social services, and instead focused efforts on creating a beneficial environment for private investment motivated by market interests. This sudden contraction of government support resulted in cities having to compete with each other to retain private investment to stay afloat (Rabrenovic, 1996).

In the early 70s Albany made an about-face on their development strategy and used urban renewal as a way to revitalize the city's downtown and attract private investment (Kennedy, 1985; Rabrenovic, 1996; Schlimmer, 2019). Gentrification was encouraged as a means of building the tax base up again to renew declined neighborhoods and revive downtown (Kennedy, 1985; Rabrenovic, 1996). With the state plaza complete by the mid-70s and national gas prices at an all-time high, this proved attractive to young professionals who desired to be closer to their downtown jobs and amenities to avoid commuting, and to take advantage of community development funding (Rabrenovic, 1996). Two main federal programs facilitated this form of renewal: The Historic Preservation Act of 1966 and the Community Block Development Grant program (CBDG) (Rabrenovic, 1996). These programs were intended to primarily benefit low- and moderate-income residents, however the imbalanced power dynamics created by Neighborhood Associations and the funding mechanisms of the federal programs made it so that more funds went towards gentrification, in the favor of middle- and upper-class Albanians.

Because the local and state government had discretionary power over the federal funds, their spending served more to "physically eliminate [the] slums" rather than to "aid the people who live in them" (Rabrenovic, 1996). Between 1982 and 1987, 45% of the funding went to housing rehabilitation (most of which was taken advantage of by gentrifiers with the disposable

income to privately invest in rehabilitation), 25% went to public improvement programs, 20% went to economic development (such as building the Downtown Albany Hilton Hotel, which was justified on the basis of providing jobs, although it only provided a small amount of low-paying service jobs), and only 2% went to public services (Rabrenovic, 1996). In the end, 572 families were displaced from Arbor Hill, 316 of whom were black (Rabrenovic, 1996). Overall, lowest-income folks received the least benefits because, with 32% of them paying over 35% of their income on rent, most were unable to take advantage of the rehab programs to become homeowners (Rabrenovic, 1996).

As patterned in the literature, the newly-powerful neighborhood groups of this gentrified area were better able to coordinate for things such as, to keep low-density zoning, keep out McDonald's on the basis that "low-cost eating facilities" could wait so as to not mar the "quiet and peaceful atmosphere, cleanliness and beauty" of the neighborhood, and to fight against the South Mall Arterial that they argued "would disrupt the neighborhoods, mar the tranquility and ecology of Washington park, and cost far too much" (Rabrenovic, 1996). As played out in other cities, these community groups were able to drive uneven canopy cover as well (Conway et al., 2011; Rabrenovic, 1996). As Kennedy (1985) put it, "Families would be moving back to downtown streets, *alive again with trees* and quickened traffic", "largely because of the South Mall, every salvageable townhouse or row house would become a target for rehabilitation. City living, in the age of the shortage and inflated price of gasoline, would once again be chic" (Kennedy, 1985).

Exclusion and Environmental Justice

Starting in 1980, the nonprofit research organization, the Urban Institute, started collecting data on 274 US cities and ranking them against each other on measures of economic health, economic inclusion, and racial inclusion (Urban Institute, 2018). They define an inclusive city as one in which all its residents have equal opportunity "to contribute and benefit from economic prosperity" (Urban Institute, 2018). According to the Urban Institute, "'Overall Inclusion' reflects the ability of historically excluded populations—in this case, lower-income residents, and people of color—to contribute to and benefit from economic prosperity" (Urban Institute, 2018). This measure is a combination of the scores for Economic Inclusion and Racial Inclusion. Economic Inclusion is a measure of the ability of those with low and moderate incomes to contribute to and benefit from economic prosperity, while Racial Inclusion is this measure as applied to BIPOC (Black, Indigenous, and People of Color).

In their report, the Urban Institute included a note which is important to reiterate:

"Although our measures of racial inclusion capture inclusion for residents of color versus white non-Hispanic residents, they may mask inequities between different racial and ethnic groups that experience exclusion in different ways" (Urban Institute, 2018). Consequently, they recommend that readers focus more on changes in these rankings over the years of measurement instead of focusing solely on the absolute rankings themselves.

By comparing cities relative to each other instead of to an exogenous baseline they can better tease out the true state of inclusion and lessons that may be learned from the cities that had the biggest changes in inclusion over time. Over time, Albany's inclusion rankings seem to correlate positively with economic health rankings. Their highest economic health and racial inclusion rankings were in 1990 (Urban Institute, 2018).

Despite this brief peak, as of 2017, according to the ACS, the Albany-Schenectady-Troy area is now the metro area with the second lowest rate of black homeownership in the country at 24.3%, following Fresno, CA at 23.2% and followed by Syracuse, NY at 25.8% (Urban Institute, 2018). It also has the 3rd largest gap between white and black homeownership with a gap of 46.2%, following Syracuse at second with a gap of 46.3%, and Minneapolis-St. Paul for first at 51% (Urban Institute, 2018). Despite the passage of laws against housing discrimination, this still occurs informally and builds up over the years as generational wealth is difficult to obtain, much less hold onto and convey down the line for many black residents. The 2008 housing crisis was particularly harmful as far as reducing black homeownership rates as people of color tended to be targeted more by subprime loans. Today, if you map demographics and income distributions they still line up very closely with the HOLC redlining maps of 1939.

Overall, since 1980, economic health improved by 33 rankings, while racial inclusion reduced by 18, and economic inclusion reduced by an incredible 119 ranks (Urban Institute, 2018). Between 2013-2016 alone, Albany's economic health ranking dropped 18 ranks from 203 out of the 274 cities, to 221, and its inclusion ranking dropped a staggering 58 places, placing it at a dismal 232 out of 274(Urban Institute, 2018). In large part, this seems to be due to the housing situation. Overall, not controlling for race, "over 60 percent of Albany residents are renters, nearly double the national average. Forty-five percent of Albany renters spend over 35 percent of their income on rent" (Garramone, 2020).

Meanwhile, after pressure from environmental justice advocates, the New York Department of Environmental Conservation (DEC)established an environmental justice program in 1999, intended to create designations for communities which have a disproportionate share of environmental pollution of various sorts (Rushing, 2018). This designation is supposed to hold

the state and municipality liable for alleviating current harms and seeking out community input in future permitting and environmental reviews to avoid compounding their environmental harms (Rushing, 2018).

The Albany neighborhoods of West Hill, Sheridan Hollow, Arbor Hill, and the South End eventually received such designations by the state. However, according to Chris Amato, the attorney from EarthJustice that represented a South End housing development in a 2014 environmental justice lawsuit, "while that designation (of an environmental justice area) implies that the community should receive more attention for the environmental burdens it faces, the state and Governor Andrew Cuomo have repeatedly ignored impacts on the community until dragged into court" (Rushing, 2018). The reality of the environmental justice program fell severely short of advocate demands for meaningful public participation and information prior to the approval of environmentally impactful projects, inclusion of EJ concerns in the environmental impact statements of such projects, proactive enforcement of those who violate environmental laws, and equitable distribution of environmental benefits, such as gardens and green space (Sheridan Hollow Alliance for Renewable Energy, n.d.).

Residents and organizations in these communities have been active in fighting for environmental justice at least since the 1980s when residents of Arbor Hill opposed the siting of a trash incinerator. Despite these protestations, the incinerator was deemed harmless, was built, and put into operation for the next 14 years, until 1994 shortly after soot once coated the snow outside of the governor's mansion (Brady, 2021).

They saw another victory in 2018 after Global Oil Company decided to not increase activities surrounding the transport and refinement of tar sands oil. This followed a four-year legal battle in which EarthJustice filed a lawsuit on behalf of South End residents living in the

Ezra Prentice housing development. Ezra Prentice residents as well as several other community members and environmental groups led local organization efforts to fight this further infringement on their rights to good quality air (Rushing, 2018).

Despite these victories, residents of the South End are still subject to the dangerous particulate matter emanating from the 1,000+ diesel trucks that drive through the area every day (Rushing, 2018). The sour smells of air pollution often keep residents from wanting to spend much time outside, and it makes the necessity of opening windows to cool off in the summer a displeasure and a danger (Rushing, 2018). The loud noises from the trucks on one side and the oil trains on the other, which are often unloaded and dealt with in the middle of the night, also disturb people from the neighborhoods on a regular basis. ``Community members have also asked state transportation agencies and the governor's office to re-route the thousands of heavy-duty diesel trucks that roar through the community each day to an industrial road a few hundred yards to the east. But the state's only response has been to say that they are "studying" the problem" (Rushing, 2018).

Even the simple requests were ignored to require Global Oil Company to adhere to the industry standard and paint their oil storage tanks white instead of the dark blue which absorbs heat, thus heating the surrounding area and emitting further pollutants (Rushing, 2018). Other sources of pollution include emissions from the nearby interstate, from trash burning incinerators, and from waste carried by the wind from the Dunn Landfill across the river (Brady, 2021). In a study of the air quality in the South End neighborhood published in 2019, it was found that the concentration of particulate matter was 13% higher in this area than the nearby measurement location in the Mt. Hope neighborhood. This directly correlated with the increased

morning truck traffic in the South End as compared to Mt. Hope; about 24% of the traffic near the former was composed of large trucks and buses compared to 4% in the latter (Brady, 2021).

As recently as 2018, plans were going forward to renew a fracked gas power plant that would supply government office buildings with energy but would continue to emit pollutants in the North Albany environmental justice area (Rushing, 2018). This plant was built in 1911 and used to burn coal (Sheridan Hollow Alliance for Renewable Energy, n.d.). Fortunately, the NY Power Authority gave in to push-back from local groups, such as Citizen Action and SHARE (Sheridan Hollow Alliance for Renewable Energy) and is opting for solar for the government complex instead (Brady, 2021).

However, in March of 2021, the New York State Senate advanced a group of bills that would build on the Climate Leadership and Community Protection Act passed the year prior (New York State Senate, 2021). These bills are intended to further "protect low-income communities and communities of color from bearing unfair and unsafe pollution burdens" (New York State Senate, 2021). It is yet to be seen whether this will result in substantive actions on the government's part, but it is hopefully a window of opportunity for community advocates to secure broader rights to environmental health and economic justice.

Again, this is not to paint a picture of victimization, because it is not. These are resilient communities with active and organized citizens. I have not spoken on that as much as it deserves because I am not equipped to tell their personal stories. However, I wanted to write all of this to make clear the magnitude and the dimensions of environmental and economic injustices that powerful economic and political forces impose on these communities, to show that planting some more trees is far from securing justice.

Making the Case for Urban Food Forestry

It was the global recession that really set the stage for the advancement of Urban Food Forestry, and its lessons on the necessity of urban food production for long-term food security and sovereignty are more relevant today than ever (Clark & Nicholas, 2013; Park et al., 2019). Anomalous weather patterns caused crop loss across the world which compounded the impacts of the recession on global hunger— ironically, many of those who were worst hit by famine were farmers (Castro et al., 2018). In response to the high demand of food, capital investment firms seized on the crisis as an opportunity to invest in purchasing large swaths of farmland to insulate themselves from the shock of the crisis and to set them up for profit later (Fairbairn, 2014). Warren Buffet describes farmland as being "like gold with yield", meaning it is valuable as a real asset that will always have intrinsic value, like gold, but unlike gold it also has the promise of additional value through the yield of agricultural products (Fairbairn, 2014).

This was the first wave of large-scale financial investment in farmland, which has increased exponentially since; in essence these land deals are like modern enclosures (White et.al., 2012). By justifying large-scale corporate land deals based on comparative advantage of economies of scale, smallholder farms are either put out of business or are absorbed via contract farming arrangements where those farmers have little choice but to provide low-cost labor to the corporate holders for as long as the corporate holders desire to have them around while also being subjected to paying rent on the land, they farm which they used to own (White et.al., 2012). When financial trends cause commodity prices to drop, like they did in the couple years before 2008, farmers struggle to make ends meet, and the pressure valve is selling off their most valuable asset: part or all of their land. One thing that the 2008 crisis showed us is that even when the financial industry loses, it still wins, and it wins at the cost of human and

environmental health and well-being— especially the health and well-being of BIPOC, low-income, working class, and immigrant communities.

In 2008, FAO released a report declaring that, "Maintaining the food security of rapidly growing urban populations, particularly the poor, will be one of the greatest challenges of the 21st century" (Clark & Nicholas, 2013; Food and Agriculture Organization of the United Nations, 2008). In 2013, Clark & Nicholas, defined Urban Food Forestry (UFF) as "The intentional and strategic use of woody perennial food producing species in urban edible landscapes to improve the sustainability and resilience of urban communities.'' They proposed this fusion of urban agriculture and urban forestry as an efficient way to provide environmental benefits while at the same time producing an abundance of low-cost nutritious foods, primarily fruits and nuts for urban residents, as well as a source of social capital and possible micro-enterprise. This is an urbanized version of agroforestry, which is a multifunctional food system, variations of which have been successfully practiced for centuries by people from around the globe.

The Food and Agriculture Organization of the United Nations (FAO) bolstered this position and encouraged cities around the world to work on developing urban food forests, and for cities, particularly cities in the United States, to stop criminalizing urban foraging and gleaning (Poe et al., 2013).

While it did not become its own key issue in the 2016-2026 US Urban Forestry Plan, as I mentioned previously, it was included as a theme of interest.

After the 2013 Partners in Community Forestry Conference, the treasurer of the New York State Urban Forestry Council wrote in their newsletter about how planting crop trees or orchards in urban areas a trend was discussed at the conference, and how she personally thought

it would be a great idea to provide food banks with fresh fruit and nuts and a good way to add more benefits to urban trees (Brockelbank, 2014). However, excitement around urban food forestry has not translated into much actionable support since (Castro et al., 2018). The website that the report promoted to house all the top urban forestry research has no articles posted about urban fruit trees (*Vibrant Cities Lab: Resources for Urban Forestry, Trees, and Green Infrastructure*, 2014). There has been a proliferation of community-led orchard/permaculture garden styled urban food forestry initiatives, such as the Philadelphia Orchard Project, which has planted over 65 small permaculture orchards in "formerly vacant lots, community gardens, schoolyards, and other spaces, primarily in low-wealth neighborhoods where people have limited access to fresh fruit". And, in 2011 Seattle became the first city to include provisioning services (food provision) as a benefit in their Urban Forest Management Plan (McLain et al., 2012).

Despite this, it is nearly impossible to find a city in North American that actively incorporates edible landscaping as an integral part of urban forestry or urban planning, even though growing food in cities has been around since the beginning of cities (Castro et al., 2018). According to the FAO, "The lack of research probably reflects the general bias of studies on urban ecosystem services in Western Europe and North America, where cities today depend mostly on outside sources of food" (Castro et al., 2018).

In almost every city across the United States, fruit and nut trees are still against city ordinances except on private property or in some parks (Nordahl, 2009). A report entitled "Roundtable: Fruit Trees in the Urban Forest", gives clues on why this excitement has not really come to fruition (Eddy et al., 2009). The report featured a collection of opinions on urban fruit trees from professionals who are members of the Society of Municipal Arborists. All eight professionals expressed mostly negative opinions about the practicality of planting urban fruit

trees. One forester described how they were asked to go on a hike to explore edible plants in a park by a community group, and how their initial thought before going was on how to steer the conversation away from planting fruit trees as street trees, but still have a positive discussion around implementing tree planting (Eddy et al., 2009). Reasons expressed by her and her colleagues against planting fruit trees in the right of way included:

- College students and kids might throw fruit around
- Fruit attracts insect and rodent pests
- Fruit trees require extensive maintenance protocols that include regular pruning, watering, and picking of fruit
- Fallen fruit and nuts pose falling and slipping hazards to pedestrians and bicyclists which may bring liability on the city
- Without pest control, many fruits might attract worms and bugs which would make the fruit inedible, yet organic pest control is labor and cost intensive.
- How will the agricultural commissioner ensure that imported fruit trees will not carry damaging pests? How would a quarantine work, and would people be allowed to bring fruit outside of the growing area?
- Choosing a tall tree may pose liability by people wanting to climb it to grab upper fruit; the upper fruit that is not harvested in time will become overripe on the branch and will be inedible by the time they fall and create a mess.
- But dwarf varieties may reduce visibility by pedestrians and vehicles and can create clearance issues for pedestrians and bicyclists.
- Fruit may take on heavy metals from car exhaust
- Fruit trees require more water than regular trees
- Tree maintenance budgets are already tight, adding the extra maintenance required by fruit trees is infeasible, even with volunteer help.
- How do you deal with people in the neighborhood who might not want local fruit trees?
- One forester also brought up questions about legality and safety: Who will police the trees? What happens if someone harvests trees without permission? Will they

be fined? Who controls the trees? Will you have turf wars? For example, if
someone takes the responsibility of maintaining the tree in front of their property,
if others come and harvest that fruit it might cause an ownership conflict.
(Eddy et al., 2009)

Seven out of the eight said that they would support fruit trees in private yards, in community orchards, and on park lands; one forester did not support this on the grounds of conflicts that could arise from unauthorized harvesting (Eddy et al., 2009).

However, one of them who was a Parks Superintendent did give the idea a bit more benefit of the doubt, saying "Let's not be too quick to condemn trees that can serve residents, but use common sense in the process" (Eddy et al., 2009). He described how in his community there were cherry trees in parks and along streets, and how every summer he sees families harvesting the fruit, "It's heartwarming to see kids outside, picking fruit and bonding as people did before video games were invented. It is a great cure for "nature deficit disorder". The Osage oranges in another local park keep kids occupied for weeks in autumn, serving as ammunition, art supplies, and spider repellants" (Eddy et al., 2009).

In 2018, the FAO reiterated that, "Feeding an increasingly urban population and ensuring the economic and social well-being of urban dwellers will be the primary challenge for cities in coming decades. The impacts of climate change are expected to slow down urban economic growth, exacerbate environmental degradation, increase poverty, and erode urban food security" (Castro et al., 2018).

And, once again, the COVID-19 crisis has demonstrated how fragile and inequitable our food system is and how precarious it is to feed urban populations during crises such as this. Disruptions in supply and distribution chains caused huge surpluses on one end— where some farmers were struggling to make ends meet and had to plow their crops back into their fields,

slaughter their livestock en masse, and pour out tens of thousands of gallons of milk— and on the other, hunger and food insecurity was estimated to have increased by around 10 million people (Capital Roots, 2021;Feeding America, 2021). At the same time, farmland investment was not only one of the few sectors to maintain its place, but it even exceeded growth from 2019 (Nuveen, 2020). Trends suggest that the commercial farming industry is only going to become more consolidated and controlled by financial actors, ramping up urban food production is essential to food security and food sovereignty.

Despite municipal reticence to plant fruit trees in urban areas, particularly along streets and other public spaces, fruit and nut trees do exist along many public right of ways. One of the foresters in the aforementioned report attributed this to accidents— trees that were planted because they were supposed to be sterile, but were not (Eddy et al., 2009). However, it is unlikely that this is the only cause. In New York City alone, there are nearly half a million trees that produce edible or medicinal items (Hurley & Emery, 2018). Clearly, some of these trees must have been planted by people who valued them. Before the industrial revolution when agriculture was ostracized from cityscapes, food-bearing trees along the streets were commonplace (recall the seasonal 'chestnutting' parties that were popular throughout NYC; Jonnes, 2017). During the early 1900s, Charles Sprague Sargent was "America's most influential tree expert" (Jonnes, 2017). He founded and ran the Boston Arboretum where he selected and cultivated tree species to export to botanical gardens, arboretums, and nurseries around the country. He specifically did not explore the possibilities of food-bearing trees because he believed "it was impossible to get people to eat new foods" (Jonnes, 2017). Some food-bearing trees still exist in cities due to historical circumstances, and others are promoted by self-proclaimed. 'guerilla grafters' or 'illegal foresters' (Nordahl, 2009). Yet, somehow despite all the

problems mentioned above, city foresters find ways to manage their current stock of edible landscaping.

A study in Syracuse, NY collected tree foods from around the city and estimated that even without extra care, the city's current Serviceberry, Mulberry, Apple, and Black Walnut trees could provide the total daily calories for around 315 adults— of course, no one really is expected to obtain all of their calories from fruits and nuts— put another way, this would be able to provide the daily recommended serving of fruits and fiber for nearly 1,700 people (excluding the black walnuts; Bunge et al., 2019). With a little more TLC and some extra planting, the potential for food production is vast. Clark & Nicholas (2013) created three different scenarios calculating how many apple trees could be planted on the available and fertile land of Burlington, VT. If just 5% of Burlington's available land was planted with apple trees it could make up the calorie deficits of all its very food insecure population (VFI). If 50% of the land was planted it could make up the calorie deficits of its VFI population and also meet the daily minimum recommended fruit intake for all its residents (Clark & Nicholas, 2013).

In the book, Public Produce, the author— who himself, is a landscape architect— argues that criticisms centered around maintenance or aesthetics are either myopic or misconceptions, and that they can be balanced by "choosing certain plants over others, mixing edibles with ornamentals, utilizing existing maintenance staff and methods, and properly gauging community demand for fresh, local produce" (Nordahl, 2009).

Many of our ornamental trees and plants create plenty of mess and maintenance as it is. For example, ornamental flowering plums, ornamental flowering cherries, strawberry trees, and Victorian Box trees produce beautiful displays of flowers or fruits, but produce messy and inedible fruits, while Sweetgum and Red Horse chestnut trees are prized for their bright colors

but drop hard seed capsules on the ground (Nordahl, 2009). All these species are commonly found as street trees throughout the country; they cause much of the same mess and potential liability that edible fruit and nut trees would, but their aesthetic qualities seem to outweigh that. "What is worse, a conifer that dribbles sticky sap and drops needles throughout the year, or a deciduous tree that releases an abundance of leaves all at once? Is an apple tree that drops fruit once a year more of a maintenance headache than a silver maple that heaves and breaks sidewalks at maturity?" (Nordahl, 2009).

This is not to say that the concerns from above are not valid, or that city residents would not share them as well. If done improperly without good public input or design, this kind of planting could cause substantial environmental disservices, contributing to environmental inequity. But this is to say that there are degrees of messiness and disservice and it would be a shame to completely disregard the opportunity outlined by the FAO and UFF proponents without even trying to come up with ways to balance the challenges with the potential. It is attitudes like that of the first forester that concern me the most: in response to citizen interest in food-bearing trees, her first thought was not about listening to them and seeing if they could devise solutions to deal with the difficulties of the idea but was instead to think of how to discourage the idea without diminishing their thoughts about urban forestry in general (Eddy et al., 2009).

I cannot blame her or any other individual urban forester personally for such an attitude, it is in line with the profession's prevailing narratives and is reflective of the constraints foresters face when trying to manage such large and complex systems with the relatively few resources and diverse public opinions they must deal with. The point is that these concerns should not necessarily be the end of the conversation, but the beginning. So, considering this I will spend the rest of this report trying to outline possibilities that citizens who might be interested in urban

food forestry can keep in mind so that they may be able to figure out if, and how, food forestry might be right for them, and so that they may meet city agencies in the middle and advocate for their well-founded desires for a multi-functional urban forest.

A New (Old) Nature Paradigm

As I have previously described, the field of urban forestry as we know it is largely based on the premise of "trees are the answer"; funding and support for the field have largely been garnered by promoting the myriad of ecosystems services that urban forests provide (National Urban and Community Forestry Advisory Council, 2015). Randrup (2020) considers this a 'Nature Based Solutions' (NBS) framework,

> The NBS concept can be defined as solutions that are inspired and supported by nature, which are cost-effective, simultaneously provide environmental, social, and economic benefits and help build resilience. Such solutions bring more, and more diverse, nature and natural features and processes into cities, landscapes, and seascapes, through locally adapted, resource-efficient and systemic interventions.

While the increased focus on economic values and technocratic management have done a lot to increase attention and funding for NBS projects, such as urban forestry, and these have added to increased well-being in some cases, these have not done much overall to increase sustainability, biodiversity, and certainly not food security (Randrup, 2020).

According to Randrup (2020), international bodies suggest that to achieve our goals for a livable natural and human world in the coming decades we must take on "fundamental changes in development" which include more efficient uses of land, water, and energy, as well as major transformations of food systems. The report argues that, "goals for conserving and sustainably

using nature and achieving sustainability cannot be met by current trajectories, and goals for 2030 and beyond may only be achieved through transformative changes across economic, social, political and technological factors" (Randrup, 2020)

Even as we try to reintegrate nature into our urban spaces through the concepts of sustainability, we do so with the dominant Western conception of the duality of nature and culture— exemplified even by my describing this as bringing nature into urban spaces, as if people are not inherently a part of nature and as if nature is not inherently a part of urban spaces (Randrup, 2020).

The approaches of sustainability and ecosystem services have been useful for creating frameworks to allow a weighing of environmental, economic, and social needs by quantifying the services that nature provides us. This has helped us make a lot of progress in finding ways to prioritize human and environmental health in the face of economic pressures, where they might not have been before. Language used in such projects primarily ascribe instrumental value to nature and how nature may be used as a tool to achieve our broader goals in a technocratic manner (Randrup, 2020). Again, this has been helpful for combining concepts of ecology with urban development, however it also has limitations, particularly in addressing the social impacts of sustainable development and how these values are measured against ecological and economic values.

Projects that primarily speak about the 'solutions' and 'services' that nature can provide, tend to "start from seeking solutions for expert-driven problem definitions, which sets the boundaries for efforts to include -or not- community participation or the relevance of intrinsic values of nature in planning, design, construction, and management processes" Randrup (2020). Randrup (2020) suggests expanding beyond the framework of 'Nature-Based Solutions' to one

of 'Nature-Based Thinking' in order to spur the transformative change that is required of us and our systems to meet the challenges of the next several decades. This includes recognizing not only the services that nature provides, but also its intrinsic value as well as the inclusion of "culturally diverse and community-centered ways of thinking about and relating to nature" (Randrup, 2020).

This means taking a more holistic approach to urban planning by creating more room for less manicured 'wildscapes' as well as tapping into the transformative potential of community organizations and individual engaged citizens (Randrup, 2020). If urbanization may be described as the progression of the "extinction of experience with nature", engaging urban citizens directly with nature and fostering reciprocal relationships with it may be more transformative than top-down approaches that encourage inclusion simply through participatory planning processes, even if these approaches come from places of good intentions (Randrup, 2020). This calls for planning with long-term visionary goals, but incremental and adaptable steps towards more holistic and sustainable landscape uses and the related social, economic, and governmental relationships to it to allow for changing conditions and values that will occur along the way. Randrup (2020) suggests we approach this by considering the three dimensions of NBT as well as the linkages between them. The three dimensions are Ecological, Community, and Economic. I will use these dimensions to frame my arguments and recommendations for potential Urban Food Forestry projects.

The Ecological Dimension

The nexus of ecology and governance calls for creating more room for nature beyond human services so that ecosystem functioning may occur that will allow for long-term adaptation in the face of unpredictable changes (Randrup, 2020). This entails moving beyond the view of nature as sort of the "icing on the cake" that is utilized to remedy the hostile living conditions imposed by our urban development (Randrup, 2020). For example, we currently make room for urban nature simply by switching out past land uses to supplement greenery, such as making room for street trees. However, this is inefficient because the hostile growing conditions of urban development hinder any opportunity for meaningful and lasting integration of urban and natural elements. "Urban nature suffers from planning which does not leave room for nature, design and construction processes which focus on economy and technical solutions, and maintenance costs which are often neglected" (Randrup, 2020).

These failures are clearly evidenced by the state of the nation's urban forests which continue to decline despite nationwide efforts to arrange planting programs (National Urban and Community Forestry Advisory Council, 2015). Monocropped and dense planting, soil compaction, small root spaces, polluted air, and water, and most of all, the lack of appropriate and consistent maintenance, make it nearly impossible for urban street trees, of any variety, to live far beyond a few decades— assuming that they are one of those that make it past their few years of life on a city street. These are not new problems, we have been dealing with these same inefficiencies since city tree planting was first formalized in the US: "Trees are placed in a hole quite too small for them, a little rubbish is thrown about their roots, and bricks are laid carefully as tight and near the root as possible…nobody ever thinks of watering it, it dwindles and dies.

The wonder is that any city tree ever survives the treatment" Andrew Jackson Downing 1846 (as quoted in Jonnes, 2017).

Case in point: I heard from one of my interviewees (whom I will call Melissa), as well as from a South End Neighborhood Association meeting, that last year Albany planted a row of trees along the South End biking and walking trail connector, after only one year all the trees are bright orange and dead from the winter's road salt. Melissa attributed this to poor design that was likely the result of a lack of professional coordination— the landscape architects must not have consulted any arborists, like herself. If we are truly to conceptualize the urban forest as an interconnected functioning ecosystem, like the 2016-2026 guiding document suggests, we need to address these points of opposition. Road salt and urban greenery/green infrastructure in general is a great example of how our integration of urban nature is incomplete.

On Bard's Annandale-on-Hudson campus, I was part of a class that did studies on some of the college's constructed wetlands which were supposed to provide habitat and a nature-based solution for filtering stormwater runoff. However, road salt accumulated in the wetlands and instead of creating biodiversity-bolstering habitat, it created an ecological trap that attracted wildlife, like frogs, and ended up essentially pickling them instead. The extensive use of road salt in the last several decades has had significant implications for terrestrial as well as aquatic ecosystems, even beyond urban developments (Hinsdale, 2020).

In the last couple of years, some municipalities have started to use salt-brine to use a lot less salt, and others have gone further and switched out salt entirely for deicer solutions made from agricultural by-products like beet juice, brewer's mash, and cheese brine. Recently, researchers from Washington State have developed a process to chemically degrade and ferment agricultural waste products— in their case grape skins— to create a deicer that melts ice faster, is

less corrosive, and does not deplete oxygen in nearby aquatic ecosystems, unlike traditional salt-based deicing solutions (Yale Environment 360, 2019). This process can use almost any agricultural waste: the scientists have successfully used peony leaves, sugar beet leaves, dandelion leaves, and apples. Integrated nature-based ideas like this have the potential to meet our urban infrastructure needs, while protecting ecosystem health, and diverting waste streams.

This has the potential to even improve regional food security as it provides a way for local agricultural producers to bolster their farm revenues by adding economic value to what would otherwise be a waste-product. Agriculture in the time of COVID demonstrated how disruptions to the current food system risk food security for farmers and for low-income citizens alike (Capital Roots, 2021).

Referring back to tree-based edible landscapes, the main gripes with this kind of urban planning are that publicly grown foods risk creating mess and liability due to being under harvested, and that food-bearing trees take extra maintenance. Imagine if we reconceptualized this as not only a way to provide locals with fresh food, but could also add value to the 'waste' from these trees, in this example de-icing agents? These plant-based agents would not only reduce overall winter road maintenance costs but would also mitigate a source of urban hostility to trees. The reduced overall maintenance costs would easily cover the maintenance these trees might need to stay healthy and would mitigate their potential environmental disserves. This is but one example that immediately came to mind based on my own personal experiences. The point is: nature-based thinking is rich with potential for fostering environmental, social, and economic sustainability.

Climate change calls for experimentation and adaptation. No matter how carefully we choose what to plant or where to plant it, climate change is going to cause plant die-offs and

shifts in vegetation regimes. The New York City Panel on Climate Change predicts NYC could have summers similar in heat and humidity to Alabama's current summers (New York City Panel on Climate Change, 2013). Already, since 1970, average state temperatures have risen about 2.4°F (NYS DEC, 2014). While NYC has more warming potential than Albany, future warming potential is still significant, especially in the unforested parts of the city that are prone to urban heat island effect. In addition, summers will feature more droughts, winters will have more rain and snow, and spring will come on earlier (NYS DEC, 2014). So, we must be prepared to roll with the punches. This means finding ways to "enhance learning and embrace uncertainty, thus finding systemic ways to reduce it" (Ordóñez Barona, 2015).

One consideration to keep in mind, and something that would be good to research more, is the role that trees play in seasonal allergies. Currently, because cities primarily only plant 'male' trees, pollen counts are much higher than they would be naturally, exacerbating allergies and asthma more and more each year as the pollen season extends (NYS DEC, 2014).

While food-bearing trees might help with the pollen factor, another thing to keep in mind is Oral Allergy Syndrome (OAS; Castro et al., 2018). OAS occurs when an individual eats a piece of produce that cross-reacts with certain pollen proteins (American Academy of Allergy, Asthma & Immunology, n.d.). For example, someone allergic to Birch pollen might have reactions to eating apples, plums, or cherries; someone allergic to Alder pollen might have an allergic reaction to pears, apples, and hazelnuts. Reactions can range from itchy mouth and throat to tongue and throat swelling, or rarely anaphylaxis. OAS is different from other food allergies because it is directly related to pollen allergies: a person might be able to eat raw apples no problem in the wintertime, but then can have reactions to it during the height of their offending pollen season. People often develop OAS later in life or will react to more cross-reactive foods

as they get older (American Academy of Allergy, Asthma & Immunology, n.d.). (Yours truly knows, she is allergic to ragweed because she gets OAS from eating bananas, fun.). I do not know what that dynamic will be between an increase in seasonal allergies and public produce, but it is something to think about, especially regarding children.

Speaking of pollen, to produce fruit, trees, need to be pollinated. Some species can self-pollinate, but others need other trees nearby. For example, apples, pears, and Japanese plums need to be pollinated by other varieties of their species (Detroit Agriculture, 2017). For these the best practice is to plant at least five of each tree that include two different varieties.

Ordóñez Barona (2015) gives several guidelines for how to make urban forests more resilient in the face of climate change. One of the most important guidelines is diversity! This means a diversity of species and ages as well as including native and endemic species as well as experimenting with some southern varieties. A guiding principle put forward by Santamour (1999) is the 30-20-10 rule: do not plant more than 30% of any one family, 20% of any one genus, or 10% of any one species in the forest. This is especially pertinent to fruit trees because there is already a limited variety of breeds and fruit trees tend to be more at risk from pests. This might mean propagating new varieties, reviving old ones, or integrating less-familiar tree foods (Castro et al., 2018). The Tree Streets Food Forest in Johnson City, Tennessee is working to enhance resilient tree stock through a genetics observation program (Bukowski, 2018). Volunteers go around the city mapping and observing local trees that seem to be adapting well to the urban environment. They then harvest seeds from those trees to propagate and sell the seedlings to locals. Additionally, they are trying to train those who might want to join the tree nursery business. In some ways, climate change may be positive for growing fruit trees because

it will lengthen the growing season and will allow for a wider variety of southern species to thrive better than they have before, such as figs (NYS DEC, 2014).

In general, any kind of scaled-up tree planting program that wants to plant non-typical varieties should work closely with a local nursery or partner with local schools or community gardens, for example, to grow enough seedlings of the varieties you desire. After deciding to contract directly with three local nurseries instead of working through a middleman that contracted with out-of-state nurseries, NYC was able to expand their tree palette from 15 to 120 choices, which allowed them to pull off their million-tree initiative (Jonnes, 2017).

Other guidelines put forward by Ordóñez Barona (2015) mainly include investing more in each tree's survival: reducing water stress, paying more attention to trees when they are young, increasing forest connectivity and habitat quality, and creating solid monitoring protocols. Additionally, the paper recommends regularly surveying citizens about their happiness with the forest, getting citizens more involved with managing trees beyond just planting them, and generally increasing social access to the urban forest.

The Community Dimension

The nexus of ecology and community calls for a new urban aesthetic that allows for diverse manifestations of what nature can/should look like and how it can be interacted with ((Randrup et al., 2020), 2020). This is in comparison to our current approach, where the limitations of our economic and infrastructural conditions limit opportunities for the growth and connection with nature. Community-ecological approaches that leave room for 'wilder' "I.e., more biodiverse and

ecologically complex" urban nature may benefit from "the recognition that humans are a part of nature rather than being separated from it" (Randrup et al., 2020).

This creates room for different and culturally diverse conceptions of and preferences for nature. It is important that communities are given the rights to be stewards of their own environment— to be able to choose the degree that they connect with it, care for it, and make decisions about it. A diversity of "ecological and aesthetic characteristics of urban nature" as defined by the local pockets they are a part of, is more evocative of natural processes and is more socially inclusive than the homogeneous landscaping principles imposed by the dominant and narrow cultural view of central city agencies (Randrup et al., 2020). This means that people should be able to opt out of trees, choose edible landscaping, choose big shady canopies, or any combination thereof that is ecologically and financially feasible. Natural landscapes are not consistently forested, and they are not forested in a homogenous fashion, so why should our urban landscapes be if we are trying to treat them as ecologically complex ecosystems?

For example, the values that urban forestry, conservation, and much of the white environmental movement are based on glorify the scenic and supposedly pristine, untrammeled, and unaltered wildernesses of the frontier: wild forests, raging rivers, purple mountains majesty, and so on. In comparison, "The ideal or utopian natural landscapes of Latino writers are peopled and productive", based on their traditional connections with the "garden and the sea", both as sources of livelihood and as "instruments of bondage to dominant economic systems such as plantation life" Barbara Deutsch Lynch (as quoted in Glave & Stoll, 2005). Many cities in Central America incorporate agroforestry within their cityscapes— colonial architecture is interspersed with layers of trees, vines, and shrubs— both ornamental and edible.

Black Americans also have a multitude of shared as well as individual preferences for and conceptions of the environment. A lot of scholarship exists trying to explain why Black Americans engage less with conservations about environmentalism and with traditional environmental groups. The initial inclination of early scholarship was that it must be due to different values about nature, that black people are urbanized and not connected to nature, and so do not value it the same way, or, that many of them are so focused on meeting basic needs that they do not have room to care much about nature (Glave & Stoll, 2005).

However, it has more to do with the fact that traditional conservation and environmental movements are not inclusive or holistic enough in their treatment of nature and environmental problems. Black liberation theologians are credited with sparking the environmental justice movement which sought to challenge racist development policies that allowed for disproportionate siting of toxic facilities and dump sites near black and POC settlements, even when controlled for income, policies that were in some parts advanced by the United States Environmental Protection Agency (Glave & Stoll, 2005). Some of the philosophies that initially drove this movement came from a religious sensibility of connection with and responsibility for God's creation, in contrast to white Christianity that interpreted nature as a gift from God to serve human dominion.

While the relationships might be complicated by historic dichotomies between labor and love, Black American culture is full of rich natural histories, some of which have largely been the inspiration for the urban agriculture movement since at least the early 20th century, "...gardens and horticulture contained strong historical significance that can be traced from Africa, through the American South, and eventually to the cities of the North and West" (Zeiderman, 2006). Glave & Stoll (2005) call for a "new story about race and place in America.

This new story is not only about toxic waste dumps and hazardous materials; it is about the fundamental right of a people to have a relationship with all of creation".

Tree-based edible infrastructure is an example of how this can play out. Food-bearing trees, like many other cultivated food crops, are intricately linked to self-identity and sense of place, yet instead of nurturing this, most cities work against it (Poe et al., 2013; R. J. McLain et al., 2013; Shackleton et al., 2017). For example, Albany, like many other cities, allows for only non-fruiting Ginkgo Biloba trees to be planted in the city. The trees are aesthetically pleasing, but their fruits create very unpleasant odors, particularly when they are not appreciated, harvested, and end up being crushed under foot (Nordahl, 2009). However, to many people of Chinese, Korean, and Japanese descent, ginkgo berries are appreciated for their high nutritive and culinary value. Chinese women, in particular, are commonly reported as collecting ginkgo berries from city trees (that for some reason are not sterile) for this purpose (Nordahl, 2009; Poe et al., 2013).

A justice perspective recognizes the fundamental ways that diverse cultural identities and social relations are embedded in gathering practices. This observation is particularly significant in socio-economically diverse cities, in areas with colonial histories of indigenous displacement and trauma and where indigenous and other longstanding livelihood-based users seek access to natural resources to support cultural revitalization and a deeply historic struggle for food sovereignty (Poe et.al., 2014).

The second most cited reason for foraging is to gather medicinal plants (Poe et.al, 2014). This is culturally important, and a means of self-guided healing, a particularly important practice for people who have limited access to institutional health care. Alternative medicines are not necessarily a substitute for professional healthcare, but they can be an important part of preventative care and of improving health outcomes.

Urban foraging practices in general show the social and cultural importance of 'wild' urban edibles, and how they provide opportunities to meet food security, better health outcomes, and how they foster stewardship of urban landscapes (R. J. McLain et al., 2013).

Multiple studies have shown that foraging and gleaning are practices that appeal to a broad swath of people represented by all races, ages, ethnicities, countries of origin, and income levels (R. J. McLain et al., 2013; Poe et al., 2013; Shackleton et al., 2017). In most places laws and codes surrounding feeding off urban landscapes, outside of established urban agricultural spaces, are either expressly prohibitive or vaguely worded, with the effect that foraging is often assumed to be prohibited by practitioners, enforcement officials, and bystanders (Linneken, 2018). This either discourages foraging or criminalizes it and brands foraging practitioners as acting in counter-culture rebellion.

New York City has a bad track record in regard to discouraging and policing foraging (Linneken, 2018). At least as late as the end of the1980s, park ordinances prohibited "destroying, cutting, or pruning trees, or severing or removing plant vegetation". This law makes it unclear whether picking fruit, for example, is allowed or not. In 1986, the city conducted a sting operation to apprehend a person who had been leading guided foraging tours in Central Park. He was arrested for the crime of "snatching and eating dandelion greens from the meadows of Central Park" (Linneken, 2018). Speaking on the matter, Parks Commissioner of the time, Henry Stern, said that he "couldn't stomach the idea of anyone 'eating our parks'" (Linneken, 2018). This is far from an isolated example.

Despite worries about foraging damaging city greenery, foragers harbor incredibly valuable hyper local ecological knowledge and often act as careful stewards (R. J. McLain et al., 2013; Shackleton et al., 2017). During this project, I interviewed a Capitol Region resident,

whom I will call Jack. Jack has been foraging and gleaning in the area for around fifteen years. As a cab driver, he not only has local ecological knowledge, but regional knowledge as well. He knows where edibles grow abundantly or scarcely throughout the region, and when they are ready to eat. When we talked, he talked about fiddlehead ferns currently coming up in Saratoga, and stinging nettle that should be ready soon in Albany. He talked about edible plant parts that are only good for 2-3 days per season, such as maple and willow buds, which according to him can be made into pastries and bread products. Knowledge like this will prove especially valuable for keeping track of how microclimate vegetation regimes will be changing in the face of climate change.

While eating and preparing a lot of these things is unusual to most people now, it is important to acknowledge the roots of these foods. Heather Bruegl, Director of the Stockbridge-Munsee Department of Cultural Affairs said at a public talk recently that even if the Stockbridge-Munsee or other indigenous peoples are not physically in their homeland, it is important to acknowledge their connection to it and to continue to spread their history and knowledge (Bruegl, 2021). If trying to promote practices based in their traditions, such as, processing and baking things with a corn flour for example, it would be best practice to include Stockbridge-Munsee people in the conversation about that and how to go forward with it respectfully if it is appropriate to do so (onstolenland, 2013). This should go for any indigenous-based skills, as some skills and practices might not be respectful to appropriate.

Many foragers voluntarily care for and cultivate positive species while working to control invasive species. For example, many of Albany's natural spaces are overrun by the invasive tree, Autumn Olive. Contrary to its name, this tree bears sweet fruit that apparently tastes like something between strawberry and cranberry, depending on when you harvest it. Jack described

collecting enough fruits from one tree to make three gallons of jelly. He then gave this jelly away as gifts, partially using it as an opportunity to open his friends' and coworkers' minds about what food resources they had around them and alternative ways to manage invasive species, but mostly as a way to share abundance with his community.

Jack, as well as Nordahl (2009) suggest that helping people and municipalities to adopt a mindset of abundance is important to ensure that planting food-bearing trees does not cause the environmental disservices of mess, pests, and liabilities due to under-harvested trees. It seems like the main solution is to try to match the supply of tree foods with the demand for them. For example, a less-traveled street lined with thirty Mulberry trees is likely to see a lot of mess from unharvested fruit, especially if it is in an area where people are not awfully familiar with Mulberries or if they do not know that they can eat them (Nordahl, 2009). On the other hand, planting a couple of apple trees in a busy town square will probably see the apples go by quickly which could possibly cause conflicts, or at least not everyone who might want to take advantage of the public produce could (Nordahl, 2009). It is common for people to express concerns about overharvesting or 'stealing' public foods (such concerns were expressed by a couple of the forestry professionals in the roundtable speaking against urban fruit trees), however it is much more likely that these trees will outstrip demand (Eddy et al., 2009; Linneken, 2018).

The first step that would be helpful is to work with the city to change codes that prohibit provisioning services, and even better for them to adopt codes that encourage them as a means of trying to meet food security goals so that people do not run the risk of being penalized. In the case of tree-based edibles, I think this is especially pertinent considering the recent scholarship that is flipping the tree and crime narrative on its head.

Much of the previous literature that connected trees as accessories to crime was mostly theoretical and was confounded by the overall culture of fear that was at least partially fabricated or simply based on historically informed intuitions.

In the mid-2000s, as urban tree studies became more data-driven, studies done in multiple cities showed a negative correlation between tree cover and crime (Kondo et al., 2017; Troy et al., 2012;Wolfe & Mennis, 2012). One of the most comprehensive studies took place in Baltimore, Maryland (Troy et al., 2012). The study compared neighborhoods within a 700 square mile area with shared characteristics such as income levels, population density, and age/quality of housing stock, while controlling for socioeconomic factors. The results showed that a 10 percent increase in canopy cover coincided with an 11.8% decrease in crime (Troy et al., 2012).

A 2012 study in Philadelphia, PA showed a 7-8% decrease in gun assaults after 4,300 vacant lots were cleaned up and planted with trees (Wolfe & Mennis, 2012). Researchers pursuing this line of study "aim to build common cause with police, public works departments and city planners on the multiple benefits of developing greener cities", and to determine how to maximize urban forestry initiatives (Wolfe & Mennis, 2012; Conniff, n.d.).

Emerging from this research is a "broken trees" theory where trees are treated as "non-human policemen" (Braverman, 2008). The logic of this theory is that greening in general, and trees in particular, positively impact mental health and increase emotional attachments to a person's neighborhood by providing "a contrast to the harshness of the extensively built environment" (Braverman, 2008). This imbues trees with importance beyond their physical benefits; good maintenance of trees leads to maintenance of social order. While it may be true that trees have these effects, and if it is it could have positive implications for communities plagued by high crime rates, there is reason for pause even if the theory of causation is correct.

"Treescaping", argues Braverman (2008), "is yet another technology for governing urban populations and, moreover, one that utilizes the trees' natural properties to legitimize this form of governance". This has the potential to be problematic in the following ways:

- Municipalities may act like they did in Detroit case study and plant trees as a universal good, without regard to community input and agency.

- Treating trees as 'non-human policemen' may create a dynamic in which interacting with or 'damaging' trees is seen as inhibiting their crime-deterring abilities, leading to an over-policing of people's interactions with or near trees.

- It normalizes using urban design as a means of control and social manipulation.

- Municipalities may use tree planting and overall beautification to deal with crime to excuse themselves from spending time and resources to actually deal with the root causes of crime.

- It retains the logic of broken windows policing, which may have sounded good on the face of it but ended up being harmful to a lot of people of color due to the internal logic which validated excessive policing of 'disorder'.

Potential over-policing of interactions with trees is particularly troublesome because of already tense relationships and lack of accountability between Albany police, City Hall, and their citizenry, and because of trees' inherent relationship with ideas about property (Albany Center for Law and Justice, 2020; Darmanjian, 2020; Sheridan, 2020). Trees' intuitive link to property values and their sedentary nature, "makes trees into an inseparable part of the notion of territory" (Braverman, 2008).

So, in my opinion, working closely with city agencies to have clear ordinances and to have everyone on the right page regarding foraging, gleaning, or just interacting with trees and

landscaping in general would be a crucial first step in any program seeking to promote the above activities.

Secondly, the literature and at least two of my interviewees expressed hesitation about pesticide application. They suggested that it would be helpful to work with the city to have some sort of transparency about whether edibles are, or should be, treated with chemical pesticides. Jack currently uses visual cues that suggest pesticide application, such as wilted and yellowing leaves or monoculture stands, to know what to avoid, but it would be best if the city were to not spray edible plants where possible and/or to put up signs that signal pest control practices or the lack of near these plants.

A few cities are working to support gleaning and foraging practices, typically through partnerships with community organizations (Nordahl, 2009). These sorts of partnerships have the potential for the planting and maintaining of trees as well as the potential to enhance environmental and food justice. One of the most cited reasons that people do not want trees near them is because they do not have the desire or capacity to maintain the trees (Ketcham, 2015). To maximize equity in promoting tree-planting on or near private property for rental properties or for low-income, differently-abled, or residents who otherwise face time and energy constraints, reducing maintenance responsibility is a great help.

For example, a group in Portland called Friends of Trees offers a large catalog of street trees that they train volunteers to plant, water, prune, and mulch for residents who want trees in front of their residences but are unable to plant or care for them themselves (Friends of Trees, 2021). The trees cost an average of $35 but are no cost for those who are unable to pay; maintenance is also provided at no charge for those who the cost may be prohibitive to. For the

first two summers after planting, they will monitor the street trees and assess their needs and will care for the tree for the first three years of its life.

Not all their trees are fruit trees, but they do offer nearly 70 varieties of fruit trees that they worked with the city to authorize as street trees which include varieties of apples, pears, plums, cherries, black walnuts, etc. They are working with Portland's Clean Energy fund to help subsidize mature tree care costs so that they can continue to provide these services (Friends of Trees, 2021).

This program was born out of three focus group sessions where they assessed the barriers that kept people from participating in tree planting programs even if they wanted trees. They include events in at least three different languages; the most cited reason for not wanting trees was concerns about maintenance costs. At this point in time, they are a large-scale organization that mobilizes over 6,500 volunteers each year to monitor and maintain over 54,000 trees (Friends of Trees, 2021).

They also organize neighborhood harvest parties. In 2007 eight parties, 132 volunteers, and 50 trees yielded over 3,400 pounds of produce (Friends of Trees, 2021). The highest quality produce is donated to food banks, the lower quality produce goes home with volunteers, and any inedible produce is composted. Another program in Seattle harvested over 28,000 pounds of fruit from preexisting fruit trees in five neighborhoods in 2018 (Nordahl, 2009).

Harvesting programs have the potential to reduce environmental disservices from fallen fruit in public spaces and might also be a way to introduce private property owners to gleaning and help them out by arranging to harvest what might otherwise go to waste from their trees as well. This might serve the city's interests and garner their support because it could reduce the incentive for fed-up property owners to cut down their trees, as the city wants to minimize all

possible tree removals. Another interviewee of mine, whom I will call Carol, recounted a recent experience where she became terribly upset with her neighbor for cutting down the crab apple tree in front of his house because he was annoyed with the fruit it dropped. She recounted how she used to like to look at the tree from her window and grab fruits from it occasionally, and she expressed frustration with urban and suburban residents' overall lackadaisical attitudes towards cutting down long-lived trees because they can be replaced, even though it takes a long time for trees to mature and provide the same number of benefits. She told the neighbor that if he had only expressed his frustrations, her and probably their neighbors would have been happy to harvest the apples for him. The tree has yet to be replaced and emotions still run high.

Both the literature as well as my interviews identified the lack of familiarity with wild grown foods as one of the biggest barriers to an edible tree planting program. This applies in that people are unfamiliar with particular kinds of wild foods, and/or they are also uncomfortable or unfamiliar with the idea of eating publicly grown foods. Most people are no longer socialized to feel okay with taking free food from landscaping because it is not widely practiced in most urban areas in the United States, and there is a perception (that may or may not be grounded in truth, depending on the municipality) that this is not permissible.

If additional food-bearing trees are planted as a part of edible landscaping, in the few years before these planted perennials start bearing fruits, it would be a good idea to build the familiarity and capacity to harvest the appropriate amount by the time that comes around. After requesting more permissive ordinances around foraging, it would also be beneficial to ask for the city to input the tree inventory data into fallingfruit.org. This is a citizen-science type of program where people geotag foraging opportunities in their local area (this focuses on edible plants, but does also include other things, like bakeries that give away extra baked goods at the end of the

day, and dumpsters with relatively clean/intact food). The website has an option for cities to input tree inventory data and the site will automatically label all the edible species on their map. This would be a good start to facilitate familiarity with the foraging options in the area. For people who do not have access to a mobile phone or the internet, maps could be printed from the site and posted in conspicuous locations, such as library bulletin boards, park signs, etc.

Carol suggested that a successful program should include engaging marketing, signage, and activities to raise awareness and involvement with planting and harvesting programs, especially targeting kids and their families. Her, Jack, and Nordahl (2009) all recommended putting appealing signage on edible trees that encourage people that it is okay to harvest from the tree, and that display information such as what the tree is, when and how to harvest from it, and how to eat or otherwise use the items harvested.

Something that might be engaging and useful for ESL speakers, people who may be hard of seeing or blind, and those who may not read English would be to communicate similar information via sound. This is inspired by a 2009 art installation in the Bronx called Tree Museum (Jonnes, 2017). In this installation, one hundred trees were marked with plaques that had a phone number for visitors to call (this could easily use something like QR codes or social media now) to hear a forester, poet, or activist speak about that tree. This has the potential to not only share practical information about the tree, but also could be an opportunity to share local stories or other engaging sound bytes. Currently, Albany's city code prohibits attaching anything to trees, but I imagine this could easily be negotiated.

The potential for biodiversity and stewardship is great when trees are allowed to fruit and provide sustenance to people and animals alike, just think about the lost biological potential of our thousands of non-fruiting street trees. By finding ways to incorporate edible and medicinal

landscapes that are culturally and socially relevant, people can increase their food security and have more impetus to be stewards of their environment. It can also be a wellspring for community connection: from getting together to do planting and maintenance, to throwing harvest parties that celebrate the bounty with kids' activities, music, cooking contests, and the like, public food production enhances the possibilities of the commons.

Just because people might want edible landscapes, does not mean that other desires and ecosystems services cannot also be maximized. Through environmental assessments and community engagement people can decide what priorities they want to meet and how that can be achieved. For example, if shade and urban cooling are determined to be priorities, that can be maximized by:

- planting trees so that they shelter western and eastern windows which will block heat from the summer sun when it is at its lowest angle (Wong et al., 2017). By planting trees that branch enough you can block the heat but still allow for breeze. If you are doing this it is best to plant trees no less than 5-10 feet away, depending on how big you expect the tree to grow, to no further than 30-50 feet away if you want to take advantage of its insulation.

- If the manufacturer's specifications allow, you can shade air conditioner condenser units with trees, vines, or shrubbery to help them work more efficiently in the heat (Wong et al., 2017).

- Shading along a street can be maximized by planting trees 20 to 40 feet from each other on both sides of the street and/or along medians (Wong et al., 2017).

- Many fruit trees are best kept small, however even if they do not provide overhead shade, they cool the pavement and keep it from absorbing the heat that it would radiate back into the air at night.

- Shade can be especially valuable in areas where people spend a lot of time outside, such as around public benches, bus stops, playgrounds, picnic tables, spectator stands around sports fields, etc. (Wong et al., 2017)

- If you want a quicker alternative, you can plant fast growing bushes or vines on trellises. This can be done as either an alternative to trees, or it can simply be the first step towards building up shady vegetation (Wong et al., 2017). Relevant bushes with edible products include blueberries, raspberries, gooseberries, currants, goumi berries, blackberries, quince, and mulberries (Nordahl, 2009). Vines might include grape vines or passion vines, which can be grown almost anywhere, are beautiful and almost tropical looking, and produce fragrant and delightfully sweet fruits.

The Economic Dimension

The community governance nexus calls for better linkages between formal government and local communities which can allow for more efficient and compatible political and organizational conceptions of urban nature (Randrup et al., 2020).

Most governmental organizations are based on simple structures that are based on hierarchy and a division of tasks. As tasks grow, they are categorized and divided among ever-increasing professions and agencies. This creates an unwieldy network of uncoordinated and

siloed disciplines. "The traditional way modern society is organizing itself could be inspired by nature, as nature acts across administrative borders; water flows and roots grow irrespective of land ownership or authority" (Randrup et al., 2020). Communities tend to organize in a more organic way and offer an alternative organizational paradigm. Because active citizens are embedded in the context of their community, they are more likely to take an integrative approach to address the complexity and interconnectedness of the environmental and social issues around them (Randrup et al., 2020).

This suggests that the most efficient governance approach towards local environments is an adaptive one where formal governance institutions work to align with the needs, wants, and capabilities of local communities— usually mediated by organizations that connect active citizens, such as local nonprofits— rather than focusing on repackaging the talking points behind their own goals and soliciting perfunctory participatory planning. This would mean different levels of involvement and support for different communities, as some might prefer more or less environmental management by government agencies, but it would leave room for the stimulation and sincere appreciation of local contributions and stewardship where they might arise.

Urban food forestry can span from a primarily community-led place where community groups and volunteers do most of the work and are supported by grants, expertise, etc.; to a mostly municipal-led program where the city plants trees according to community desires and has existing maintenance workers add that maintenance to their duties, and/or they could hire a roving orchard farmer; to a public/private program where the city requires any developers who want to build new development to plant and maintain edible landscaping that is open to the public and not treated with toxic chemicals (this is already a common stipulation in a lot of city ordinances for ornamental landscaping; Jonnes, 2017; Nordahl, 2009).

Depending on the programmatic desire, design, and support, food-bearing trees can potentially be planted along appropriate right-of-ways, in front of businesses, in parks, playgrounds, churchyards, schoolyards, on people's lawns, and on. These are just a few of the many options that can be mixed and matched for a successful urban food forestry initiative.

According to surveys of forestry and public works executives, "aligning municipal departments is one of the toughest challenges to overcome" when planning a tree planting program of any kind (Vibrant Cities Lab, n.d.). Agencies who delegate land use and water quality issues include the offices of City planning, Parks, Forestry, Sustainability, Public Works, Public Health, and Regional Planning Organizations (Vibrant Cities Lab, n.d.). City Planning is responsible for zoning and development and can be allies in figuring out ways to maximize desirable green space in a way that works synergistically with development. The Parks Department would be a good partner to host edible trees and educational programs to invite people to become familiar with public foods and how to care for them. For example, in Portland, one park has an orchard that hosts educational workshops for people to learn tree-care skills like planting, pruning, harvesting, etc., which then helps reduce maintenance costs to the park for hosting the orchard (Nordahl, 2009).

Of course, any kind of tree planting program would have to work closely with the Forestry Department. While city foresters tend to be hesitant about planting fruit and nut trees in public right of ways, close collaboration might deliver a workable and mutually agreed upon solution. Working with Public Works could be a good way to foster designs to ensure that any fruit trees get the extra water they require while also facilitating stormwater management according to the agency's management goals. For example, Carol, the Arborist that I interviewed talked about how there are new techniques for building water catchments around trees that allow

rainwater to better penetrate and feed the tree and decrease storm runoff. This is important for

tree health in general, but even more so for fruit trees, and doubly so in the face of climate

change.

In general, for the last decade forestry projects have been partnering with and seeking

sponsorships from Public Health organizations because trees have the potential to improve health

care outcomes and efficient delivery of care due to their mental and respiratory health benefits

(National Urban and Community Forestry Advisory Council, 2015). Food-bearing trees would

be even more relevant because access to fresh foods and alternative medicines are also important

to preventing and managing illnesses to reduce strain on public health agencies. Perhaps the best

ally for this sort of program would be the Office of Sustainability. The three pillars of

sustainability that they concern themselves with are environment, economics, and equity

(Nordahl, 2009; Randrup et.al., 2020; Vibrant Cities Lab, n.d.). Programs that offer public foods

serve all three goals. Additionally, reducing food miles that food must travel to its recipients

could be a powerful way to reduce associated greenhouse gas emissions and support climate

goals: according to (Nordahl, 2009), in 1940 it took 1 calorie of fossil fuels to produce and

transport 2.3 food calories; in 2009 it took 10 calories of fossil fuels to produce and transport 1

calorie of modern supermarket food.

It is not enough to just provide extra food or trees to achieve environmental justice,

economic considerations like jobs are also important. For example, while urban food forestry

programs may be supported by volunteers, there is also the option to hire roving orchard

caretakers. Many cities are including urban forestry job programs in their forest management

plans, such as Syracuse, NY's recent plan (National Urban and Community Forestry Advisory

Council, 2015). With the high interest in tree planting, the demand for urban forestry services far

outweighs the supply of professionals. American Forests (2021) predicts that there will be a 10%

increase in the number of entry-level positions over the next ten years, with opportunity for up to

25% of those to be self-employed. Entry level positions in the field earn an average of $20/per

hour or $40,000 per year, with opportunity for higher earning potential down the line with jobs

beyond just tree maintenance. Tree planting programs in low-income communities not only

provides the opportunity to increase canopy cover, but also provides the opportunity to create

local jobs.

While most talk in the US about edible landscaping and foraging revolve around free

food distribution, Castro et al. (2018) and Clark and Nicholas (2013) discuss the potential for

edible landscaping to lead to microenterprise as well. When discussing urban food forestry,

many advocates, such as the New York forestry professional mentioned earlier in this paper,

promote it based on being able to donate large amounts of produce to food banks (Brockelbank,

2014). However, last year a coalition of local groups, led by Capital Roots, authored a food

assessment that analyzed the barriers to widespread food security and sovereignty for the Capital

Region. They looked at the problem systematically and identified points along the whole food

chain from production to processing, distribution, and access that could be targeted to improve

food security and the resilience of the food system in the Capital Region as a whole (Capital

Roots, 2021). The assessment noted that, especially in recent years, the region's food banks have

no shortage of fresh produce for the most part (Capital Roots, 2021). In fact, in a lot of cases they

have too much, and it is taking them a lot of human resources to sort through a lot of the low-

quality produce that is donated. Additionally, these services are meant to be emergency services,

not ways of life. While access to and education about local healthy foods are a step towards

securing food justice, according to the Capital Roots report the biggest thing that stands in the

way of this goal is tight food budgets (Capital Roots, 2021). Food justice cannot be separated from economic justice.

Jack, when talking about his Autumn Olive jelly, said that even though he gave it away as gifts for personal reasons, he also estimated that if he were paid a living wage for his time, materials, and labor he could easily make a profit like what someone makes from "organic currant jellies found specialty markets". However, he noted it is illegal to sell products made from invasive species because regulators worry that it might incentivize people to cultivate and spread invasive species. Considering how prolific and fast spreading invasive species like Autumn Olive are, it is more likely that most levels of harvesting would reduce the ability for these plants to spread and would still leave enough to profit off. I cannot say this is certain for any one scenario, such as with Autumn Olive, however from my own experience working with 'eating your way through invasive' campaigns, some schemes like this have great potential to stimulate local economies, provide supplemental income, and effectively control invasive species.

For example, Lionfish are a species of fish that are native to the Indo-Pacific but are invasive throughout the Western Atlantic. These fish are not only covered in venomous spikes, but they are incredibly damaging to ecosystems of their invaded range as they will eat pretty much anything— they are one of the few fish to overeat and put on excess fat deposits. I interned for a nonprofit in Florida that hosted bi-annual derbies throughout the Tropical Western Atlantic to cull these fish. The derbies were cultural events that gathered hundreds of people. Teams would go out and spearfish as many Lionfish as they could and prizes would go to people who caught the most, the largest, as well as the smallest fish. Then we would fillet them at the event and spread around dishes of ceviche, fish tacos, fried fish, etc.

Local markets sprung up around eating this invasive species and you could find them in some restaurants and the Fort Lauderdale Whole Foods even stocked a small selection of them by 2018. Not only did this connect the community and strengthen the local economy, but it was also effective at controlling the Lionfish to protect pockets of habitat. Despite the popularity of catching these fish, there really is no danger of fishing them out or wanting to restock them because they really are just that prolific. This is true of many of the world's worst invasive species.

I digress, the local abundance of urban forest foods, whether invasive or not, demonstrates the potential for a cottage goods industry that may support ecological health, provide people with additional opportunities to make money, bring healthy and maybe previously unfamiliar foods to the broader public, and once again reduce disservices from under-harvested urban forest edibles. While gift-giving and trading is an important value in many forager communities and fosters good communal relationships, if the ecosystem can handle it, profitable ventures could be greatly beneficial in bringing about environmental and food justice through self-employed work that has a relatively low cost of entry. Jack described walking through a neighborhood that is considered a "food desert" yet has "food every fifty feet" including forsythia, redbud, hawthorn trees, and crabapples. With some more familiarity and some extra steps many parts of the plants and trees around us can be turned into nutrient-dense jams, condiments, spreads, and more.

However, as my interviewees noted, for most people, whether they are food insecure or not, time is another one of the biggest barriers to benefiting from these foods. The opportunity to turn these foods into value-added products like dried fruits, relishes, pickled goods, jams, jellies, spreads, dips, baked goods, etc., could contribute to food justice by stimulating microenterprises

that provide people with nutritious foods and incomes. These preservation methods can also extend the amount of time throughout the year that the urban forest can feed people. Jack details some examples such as spruce tip cake, bright pink dumplings that can be made from Magnolia flowers, baked goods made with acorn flour, birch syrup, etc.

Besides the knowledge gaps, the biggest obstacles to such a micro-economy are the standards that must be met to sell cottage foods. For example, New York State only allows a select list of foods to be prepared and sold from home kitchens, such as breads and other baked goods; jams, jellies, and marmalades made from low pH fruits, dried or dehydrated vegetables, soup mixes, and fruits; and caramel apples. Other products like pickles, relishes, sauerkraut, sauces, salsas, marinades, chutneys, fruit syrups or jellies, cooked or canned fruits and vegetables, salad dressings, spreads, or nut butters are only allowed if made in a commercial kitchen (NYS Department of Agriculture and Markets, n.d.). These regulations are understandable as they protect people's health and safety.

Rather, it is access to appropriate kitchen space that is the barrier, particularly to low-income folks who might not have access to even a home kitchen, much less the right tools. One node of impact discussed by (Capital Roots, 2021) was to assist processors, particularly by "supporting BIPOC and woman-owned businesses". According to the report, "local food processing is a strong job creation tool for unemployed residents in the region and an important market channel for local farms to find business growth, both of which are important to building economic resilience in the region" (Capital Roots, 2021). Grants, financing, business planning assistance, shared-use incubator spaces like shared commercial kitchens, as well as alignment of local, state, and federal laws would go a long way in opening up these opportunities (Capital Roots, 2021).

Nordahl (2009) gives a great example of how collecting tree products along streets can reduce disservices from the trees and bring in significant amounts of revenue from the free resource. Around 2,000 olive trees (planted long ago) stood along the walkways and bike paths around the University of California Davis' campus. In 2004 alone, the dropped fruits cost the campus $60,000 in legal fees, and another almost $60,000 for cleanup and disposal. After strolling along one day and smelling the olive smell in the air, the college's Buildings and Grounds director came up with an idea to address this issue: he bought a small olive press and made his first batch of olive oil.

That year, the class of 2004 helped produce 80 gallons of 'artisan extra-virgin olive oil' and sold bottles of it for around $12-$15. The 2006 vintage produced 450 gallons and sold out in four months. The 2007 vintage made 800 gallons of different flavored blends and brought in nearly $80,000 in revenue for the school (Nordahl, 2009). This is but one example of how edible public trees can provide the ecosystem services typically attributed to city trees, as well as an abundance of food, and potentially food and income for its citizens to more than cover the costs of keeping and maintaining the trees.

Referring to the business climate in parts of Albany as a whole, according to business owners, residents, and community leaders, negative perceptions of the South End neighborhood might be the biggest challenge in attracting and maintaining investment and patronage to support local businesses (Moench & Fries, 2018). Contingent valuation studies that studied how trees impacted shopper experiences have demonstrated that customers are likely to spend 9%-12% more in business districts with significant tree cover, to shop there more often, and to stay longer for each trip (Wolf, n.d.). Shoppers will also travel farther and will spend more time in business districts with more trees, which increases the radius that contains potential customers. When

asked about how research participants felt about potentially shopping in business areas shown in pictures that had different kinds of landscaping, they rated even business areas that had "tidy sidewalks and well-designed buildings", but no trees, as the lowest end of preference but, business areas that had the same level of tidiness and well-designed storefronts and also adjacent trees were the most preferable (Wolf, n.d.). The bigger the trees, and the more the canopy covered the sidewalk and the street the better. Perceptions about product value and quality and about merchants' service in forested districts were also more positive (Wolf, n.d.).

One study looked specifically at the impact of trees on inner-city business districts that are undergoing revitalization and found that respondents reported a willingness to pay as little as 11.95% more for goods overall to as much as 50% more for convenience, 40% for shopping, and 35% more for specialty goods in treed areas compared to those without (Wolf, 2003).

While most edible trees will not provide big shady canopies, they can be interspersed with them. Shady trees might attract people because they are visually pleasing and it makes it nicer to spend more time walking around, but the addition of fruit trees to shady trees may add to those benefits as they encourage people to spend even more time while they stop and collect fruit, or at least maybe stop and read about and admire the fruit.

For example, Nordahl (2009) recommends interspersing Persimmon, Cherry, and Dogwood trees for aesthetically pleasing and relatively low-maintenance streetscapes. If this appealed to a business it could benefit them by improving perceptions of the area and attracting more business, and they could be good partners by helping to maintain the trees with occasional watering, and maybe picking and displaying the fruits. In Des Moines, Iowa, the city government, and Chamber of Commerce work with business owners to maintain vegetation in front of their stores. The merchants supply planters, and the city supplies the soil, plants, and

even offers to maintain the vegetation, although apparently several business owners prefer to do so themselves (Nordahl, 2009). Considering the positive impacts trees have on businesses, a program like this but for food-bearing trees may be doubly beneficial and would likely offset any maintenance that would go into it. Already Albany offers grants and low-cost financing for businesses to improve their facades and storefronts (Moench & Fries, 2018).

While trees have potential to increase investment in businesses for the better, they also have the potential to increase investment in the community in ways that may adversely impact a lot of people, namely through gentrification and displacement (Schwarz et al., 2015). It is easy to estimate a tree's carbon sequestration, cooling, or energy reduction potential compared to circumscribing intangible tree benefits. Intangible benefits related to property values mostly relate to mental models that may include factors such as visual appreciation, emotional evocation, or perceptions of how trees relate to the social and built environment (Donovan & Butry, 2010; Kania et al., 2018). Hedonic pricing studies have shown that on average, street trees and trees in yards can add 3-15% to a home's assessed value (Wolf, n.d.). For example, a study in Portland, Oregon revealed that street trees increased the exchange value of homes by approximately $8,870 (Donovan & Butry, 2010). Increased property values were explicitly mentioned as a benefit that Albany wants to promote in their Community Forest Management Plan, however this is not necessarily good for everyone.

Looking at Albany's current 2025 tree planting program in this light reveals some significant environmental and economic justice implications. Assuming for now that the estimated property appreciation in Portland holds true in Albany, by splitting the bill with homeowners for tree plantings, the city is essentially investing— not just in the resale value of the home that requests the tree— but also in homes around it (Schwarz et. al., 2015; Wolf, n.d.).

Even though a homeowner who signs up for the program faces immediate costs of $100 as well as maintenance costs, they still experience a positive effect on their wealth as they receive up to an 88% return on investment (ROI) (City of Albany, n.d.). By subsidizing this through tax revenues, the city is essentially performing a wealth transfer and giving those tree stewards free money from the public's good. This has substantial implications for inequity:

- The design of the program automatically favors homeowners and those with enough disposable income to pay for the upfront costs of their tree and its continued maintenance. This discriminates against renters who have little incentive to increase the value of a property they don't own and may even have a vested interest in not wanting property values to increase because it may mean increased rents. It also discriminates against people who are not able-bodied enough to maintain a tree, have too many responsibilities to take on tree maintenance, or do not intrinsically value trees according to the dominant paradigm. Basically, it provides increased tree amenities as well as wealth to the people who likely need it the least (I.e., the program generally benefits people with middle and high incomes, who are already more likely to have disproportionately high access to trees compared to the less affluent or otherwise marginalized) (Locke & Grove, 2014; Schwarz et al., 2015).

- By subsidizing the program with taxpayer money the city is facilitating a wealth transfer between those who pay taxes, but do not benefit from the subsidized trees to those who are able to participate in the program. Referring to the socioeconomic dimensions mentioned above, this is particularly problematic.

- Property value increases result in increased tax revenue for the city. Expanding the tax base in areas around tree plantings results in more concentrated political power in those places and better quality services, such as schools and hospitals, thus leading to an inequitable feedback loop (Schwarz et al., 2015).

A Tax Increment Financing (TIF) scheme may offer a solution to these issues (Rigolon & Christenson, 2019). Increases in property values lead to higher yearly tax assessments. Under TIF, the municipality agrees to use these incremental increases in tax revenue to fund public goods and services (Rigolon & Christenson, 2019). After Portland did the study to determine how much trees contribute to property values, they aggregated the data and estimated that through TIF they could accrue $15.3 million in annual revenue just from contributions due to trees (Donovan & Butry, 2010). In their case they are using TIF to fund affordable housing in the city (Portland Housing Bureau, 2019). Additionally, by making clear the value effect of trees on property, this could be a way to persuade developers to not unnecessarily cut down trees so that they do not lose property value when trying to sell the lot. It could also give the city an idea of how much developers should be charged for fines in cutting down trees unnecessarily. This is relevant in Albany because in all parts of town there have been recent and recurring issues with developers cutting down swaths of trees unnecessarily and without recourse. This happened in West Albany a few months ago during the development of a new Costco: the developers cut down several dozen trees even though they were supposed to be waiting for public feedback and municipal go-ahead. Most recently, there was an uproar in South Albany when developers inexplicably cut down dozens of trees in Lincoln Park. One of my interviewees described it,

At Lincoln Park the city worked with a firm to do a master plan for redevelopment. It sounds like public engagement did not go well: there was not enough public engagement and the right people weren't at the meetings. When the city contractors came in they cut down like 150

trees and people lost their minds, they came out in force and tore the city a new one. I couldn't believe the city would allow that to happen.

The city defended the actions as being was necessary for developing the new basketball courts, regardless, it was a measure taken without proper feedback and one that might have been avoided. All of my interviewees expressed some degree of frustration with both the city cutting down or allowing developers to cut down trees without sufficient communication with the public, whether it is in parks or along their streets. Additionally, they all made remarks about the hastening development and loss of rural character along Albany's outskirts in recent years, with varying levels of emotion. These are some of the following responses I had when asking about how they have seen Albany in their time living in the area:

It seems like more people have been wanting to do plantings and engage in agricultural systems. As far as the landscape goes, there's also more developments: more conference centers, strip malls, lots of expansion. I guess it's generally considered a thriving economic center at the moment.

Devastatingly so, it's so overrun with subdivisions and big box stores. As a kid, I remember that the greater Albany area around the city…everywhere used to be a woodlot or farmfield has been developed and sold to commercial development. All around this area, you used to drive through it and it was all rolling pastures and now its cookie cutter projects on every block. I've really started to notice it in the last twenty years. I used to be proud of being in a rural part of New York, but I don't feel like that anymore. The rural landscape is disappearing altogether. …..Change is happening, there's lots of progressive thinking, the issue is the progressive thinking isn't coming from the leaders, its coming from the grass roots. But this conundrum of sprawl and irresponsible development is a whole thing that I haven't been able to wrap my head around how to fix it. I have a hard time feeling hopeful about it unless I look at the small scale. I think hopefully organizations that are trying to get in with younger people will be very helpful. It's hard to see change happening quickly now because the older generation running things are focused on churn and burn and make a dollar. There are definitely people and things that are doing things positive, but the biggest issues is changing how we think and interact with the environment. We need to change our ideas about how land is worthless unless it's built up, how it's "wasted space". Trying to get people to have a different perspective is difficult.

It's rampant, like an epidemic. You drive North to Chatham and it's all for sale for commercial development. It's happening so fast, and I've only been here for five years….I find it really alarming and depressing. Once that land is gone, it's gone forever.

Discussing similar scenarios they came across in their research, Braverman (2020) writes, "While considered by many environmentalists to be good for nature, the "condensed city" approach (densely populated cities in the midst of rural islands) can cause an elevation of land values, thereby placing trees in direct conflict with buildings. Subsequently, trees may turn into the underdogs of urbanization and the victims of capital investment". In this way, struggles and emotions around development and the loss of a sense of place are tied to the loss of trees, and indeed discussions around trees are often very emotionally charged.

As a solution for dealing with gentrification as well as addressing motives around cutting down trees, tax increment financing is is theoretically a politically feasible solution because it is a means of funding public goods and services without having to raise additional taxes; tax rates would increase with property values regardless, TIF just ensures that those additional revenues go towards specific public programs, rather than being added to the general budget. People who have trees planted still get to enjoy the rise in exchange value for their homes, but now people not engaged in the program can also benefit. It's important to note that the success and equity of such a program depends on good and thoughtful design. It is critical that policymakers devise well-thought out measures to determine how to target who receives the benefits of TIF funds. For example, income is not a good measure in and of itself because it does not account for what costs people have, etc. that limit their expendable income. If done well, this has significant potential as an anti-displacement strategy to protect areas that are or may become vulnerable to gentrification. Some examples of how this money could be used include:

- Funding more equitable access to tree planting and maintenance.
- Creating more forestry jobs, specifically targeted towards people who are underrepresented in the field.

- Subsidizing people who want trees but may not be able to afford higher tax assessments, to keep their tax rates lower. This is important because trees tend to create bigger incremental increases in property values in disinvested neighborhoods, causing their tax rates to rise higher than others (Wolf, 2007). Additionally, people who have a strong emotional connection to their home, are renters, do not have the means to move, or are otherwise unable or unwilling to sell their home primarily derive use value from their home— their home is valuable to them because it provides them a place to live, and it would not be beneficial to sell their home. Property speculators, people of higher socioeconomic status, and land developers value properties more for their exchange value— the value they derive from selling a property. Therefore, increases in property values are more beneficial to those who derive exchange value because they can increase their profits when selling the property, while increases in property values may disadvantage renters who face rent increases from landlords whose property accrues value or other homeowners who do not stand to benefit from selling their properties, but still have to pay increased taxes.
- Funding Parks Related Anti-Displacement Strategies (PRADS) according to community needs and wants.

Time is of the essence when it comes to implementing anti-displacement strategies (Rigolon & Christenson, 2019). Rising property values trigger a feedback loop where a home might improve its value, which improves their neighbor's values, on a large scale this signals investment potential to investors and developers, who then invest in the upcoming neighborhood

which drives property values up more. Without proper strategies in place, this usually results in attracting new residents who then price out the older more established residents. Strategies to help residents stay in place and improve their socioeconomic standing that are implemented early on, before outside investors catch on, results in the most success in preventing gentrification (Rigolon & Christenson, 2019).

Implementing equitable anti-displacement strategies relies on substantial community engagement, with a focus on self-determination and contributing to community-led initiatives that might already exist, as well as implementing systematic strategies that work on inequity at multiple levels, from affordable housing, to jobs, small business support, and environmental improvements (Rigolon & Christenson, 2019).

The following chart (Figure 1) is a rendition of a graphic created by researchers who assessed and categorized Parks-Related Anti-Displacement Strategies (PRADS) that have been implemented around the United States. This chart features some of the more popular PRADS and is far from exhaustive. It categorizes strategies based on who they will primarily impact. Not all these strategies are right for every place and there are strategies that may be appropriate that are not on the list, but they are a good starting point for thinking about what kinds of strategies may be on the table.

For Renters	For Homeowners	For Businesses and Jobs:	For Private-Sector Housing	For Non-Profit and Public Housing Organizations	For Public Park Funding Agencies-- can also apply to the Department of Urban Forestry
Just cause eviction ordinance	Foreclosure assistance	Job creation for long-time, low-income residents	Single-room occupancy preservation		Competitive funding for parks and/or urban forestry programs that require or incentivize anti-displacement strategies
Rent control	Forgivable loans for home improvements	Small business creation and preservation (such as small business disruption funds)	Condominium conversion ordinance	Housing Trust Fund	
Rent review board	Homebuyers clubs		Inclusionary zoning	Community land trust	
Renters workshops	Homebuyer financial assistance		Productive incentives		
Risk mitigation fund for displaced renters	Property tax freeze for low-income homeowners		Community benefits agreement		
Renters commisison	Accessory dwelling units and compact lot subdivision		Housing linkage fee		
Othe services for low-income renters			Commercial linkage fee		

Figure 1: Parks-Related Anti-Displacement Strategies Short List: (Rigolon & Christenson, 2019

I have attempted to outline some possible points of opportunity to reconceptualize how Albany's urban forest may be used to achieve broader goals around environmental justice. However, as I began with, there is no justice, without procedural justice. I simply hope to share this information and these ideas so that it may be a jumping off point for real discussion, and if the discussion leads to it, potentially work towards a community-led urban forest program. With this inventory and the Community Forest Management Plan coming up, the city will be attempting to engage Albany communities to come up with a mutual agreement on how to increase the canopy cover for the next several years. I hope that by sharing this information beforehand, I can offer a vantage point to see how Albany's current context intersects with the larger urban forestry, agriculture, foraging, and food justice nexus. Hopefully, it can provide an

opportunity for Albany residents to consider and organize around their own visions of what the forest may be to them before municipal-based efforts, and that this may offer a chance to negotiate with the city on more even footing during this upcoming planning. The work from here is the most important of all, which is stakeholder engagement and partnership building. I touched on some aspects of this, and there is more I could lay out, but more than anything that is about building relationships, trust, and learning from the local context, which I am not equipped to do from a distance. I hope that I may be welcomed into these conversations soon.

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