

**THE COMPLEXITIES IN INEQUITIES: APPLYING CRITICAL ENVIRONMENTAL  
JUSTICE STUDIES TO URBAN GREEN INFRASTRUCTURE DEVELOPMENT**

by

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## Abstract

Many cities have turned to urban green infrastructure (UGI) to combat water pollution and urban heat island effect (UHIE). UGI is a multifunctional and serves multiple purposes to residents and the surrounding urban environment. For example, street trees not only provide temperature control for UHIE, but also provide housing for non-human species and as recreation for residents or urban agriculture has a positive effect on decreasing UHIE, but also effectively contributes to food sovereignty. This research aims to critique UGI development in the United States using David Naguib Pellow's Critical Environmental Justice Studies framework. I will evaluate different UGI features, using his four pillars: intersectionality, multiscale, the state and indispensability to understand how injustices occur within development. This research was conducted due to the seemingly lack of involvement of racialized people in the planning process. There is a continuous stress of developing more greening across the country, but usually does not account for the impacts it will have on vulnerable communities such as racialized people.

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## Executive Summary

This research addresses the overlooked communities of the United States. The development of UGI is important for the protection of people and property, however, the most vulnerable populations are usually left out of the benefits. Vulnerable populations such as racialized people and lower-income population are continually put in harm's way due to the purposefully neglect of city/local governments. This research addresses the multifunctionality of UGI, but also how past exclusionary practices, such as redlining, have made it extremely difficult for these communities to receive the justice they deserve. First, I looked at urban agriculture (UA) through an intersectional lens, finding that is more than economic gains and dimensioning the urban heat island effect but also provides racialized and other communities the opportunity to provide for themselves when their governments officials refuse to. Second, I looked at past injustices like redlining, that have made a large negative impact on racialized neighborhoods. Restricting people from living where they please created disinvestment and disenfranchisement which had led to the UGI development practices of today. Third, I assess the role of the state with land banks and how communities have the right to say how their communities should be developed. Lastly, I analyze the occurrence of green gentrification and how looking at certain groups of people as expendable as led to this phenomenon. Everyone, include institutions, need to accept everyone as socioecological agents, indispensable to the fabric of society.

## Chapter 1: Introduction

To combat the rising temperatures in cities, urban planners have begun to implement urban green infrastructure (UGI). UGI, is a natural or semi-natural structure in urban areas. UGI can include trees, urban green space (urban farms and other vegetated features), and green roofs and cool/white roofs. UGI can lower as the impact of the urban heat island effect (UHIE) and decrease flood damages from stormwater runoff. UHIE is a phenomenon that is characterized by dry heat, and low wind gusts, in areas prone to extreme precipitation events, humidity is a factor (Mathey, Rößler, Lehmann, & Bräuer, 2011). UHIE is created from the modification of land surfaces, for example, dark surfaces such as asphalt, absorb more solar radiation (Ashtari, Yeganeh, Bemanian, & Vojdani Fakh, 2021). Other materials such as pavement and roofs, and concrete have higher heat capacity which leads to UHIE. Other processes such as industrial and commercial practices also have an impact on UHIE.

Monteiro et al. (2020) articulate the eight most common principles for UGI development: connectivity, multifunctionality, applicability, integration, diversity, multiscale, governance, and continuity. However, there have been numerous studies showing the inequitable distribution of UGI across neighborhoods, mostly in racialized<sup>1</sup> and low-income communities. Other socioeconomic status such as education, income, and housing can play a role in how groups are participating and interacting with UGI (Conway, et al., 2022).

While UGI is a necessary step to bring some relief from UHIE and flooding, the implementation could be either positive for everyone or positive for some and put more

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<sup>1</sup> racialized or racialization is a replacement for race, as some scholars do not want to frame race as a biological or natural category (Gonzales-Sobrinio & Goss, 2018).

vulnerable populations in harm's way. Excluding the voices of racialized people and other vulnerable populations in the decision-making process continually put them in hazardous conditions (flood damage, heat strokes, etc.) and/or displaces them entirely. This research will focus on answering three questions:

1. *How did inequities in access to UGI develop in racialized communities?*
2. *What are the overall benefits of UGI for racialized communities?*
3. *How to rectify the wrongs, is it feasible under the context of Critical Environmental Justice Studies?*

My purpose for writing on this topic is to understand how to address inequities in UGI development and distribution by examining the historical practices that created inequities, use CEJS to critique UGI and offer solutions through a CEJS lens.

The first section will outline the features of UGI, examining the benefits and highlighting inequities. The second section will give an overview of CEJS. The third section will use Pellow's Four Pillar of CEJS to analyze how the inequities in UGI have emerged. Firstly, I will examine intersectionality to urban agriculture by looking at overlapping systems of oppression.; Next, I will use a multiscale approach to analyze the UHIE through neighborhood, city, and regional scales. For the third pillar, I will analyze the role of state power on UGI. Lastly, on the indispensability of humans and non-humans and how viewing people as expendable harms them, I will examine solutions and their feasibility, also will outline the findings, and answer the three research questions.

## Chapter 2: Urban Green Infrastructure

Cities are faced with a plethora of different issues, stemming from the relationship between the environment and society. The built environment greatly impacts the urban ecosystem, and anthropogenic climate change exacerbates the challenges (Grabowski, McPhearson, Matsler, Groffman, & Pickett, 2022). Cities primarily use gray infrastructure, also referred as traditional infrastructure (TF) which includes asphalt, buildings, pavements, and stormwater infrastructure as building material. Most city planners are adopting urban green infrastructure (UGI) to alleviate the ongoing problems that can come with TF. There are many different ways to define UGI, the United States Environmental Protection Agency (EPA) defines UGI through the Water Infrastructure Improvement Act as, "...the range of measures that uses plant or soil systems, permeable pavement or other permeable surfaces or substrates, stormwater harvest and reuse, or landscaping to store, infiltrate, or evapotranspiration stormwater and reduce flows to sewers systems or to surface waters" (United States Environmental Protection Agency, 2023, p. 1). This definition comes from the position of improving storm water runoff that pollutes the water systems in cities. Grabowski et al. (2022) explains that this definition is limiting due to the hydrological system dependence on other processes such as soil building and ecosystem engineering (the physical modification to create a habitat, maintain or destroy, by a species)

The 'urban' in urban GI (UGI) is relatively new term despite its long existence. It is supposed to provide resilience against the impacts of climate change, a means of reducing the urban heat island effect as well as water infiltration. Defining UGI in terms of multifunctionality encapsulates the many of the services it provides. This includes urban green spaces, green roofs, green alleys, public parks, street trees, urban agriculture, etc. (Van Oijstaeijen, Van Passel, & Cools, 2020). Using the definition provided by Vargas et al (2020)., "...natural vegetative

systems, green methodologies, and technologies replicating the ecosystem functions to benefit society” (p. 1337). While this definition does include all systems beyond water infiltration, it excludes non-human species. A comprehensive definition, that this research will follow, is the natural vegetative systems, green methodologies, and technologies replicating the ecosystem functions to benefit not only human society, but non-human species in urban environments. This definition emphasizes the benefits extending beyond humans that reside in urban environments.

Hoover et al. (2021) researched the common criteria for implementing GI across 19 US cities, defining siting criteria as, “...the project-scale, localized metrics, data, and considerations used to determine or identify in what neighborhoods or parcels to place GI,” (p. 668). They were interested in how GI is located on a community level due to the localization of benefits. These criteria were developed by the percentage of siting criteria in the 19 cities. These criteria include: (1) Hydrologic, managing the quality and quantity of stormwater, natural water systems, or availability; (2) logistics, siting based off spatialization, professional expertise and other physical observations; (3) social, siting based off neighborhood engagement or involvement, increasing access for health and well-being; (4) economic, siting off budget, cost and benefits or land and business development; (5) transportation, siting based off traffic management, including pedestrian or department of transportation projects; (6) environment, siting based off environmental priorities or concerns or improving air quality, not including water management; and (7) other: siting that could not be categorized (Hoover, Meerow, Grabowski, & McPhearson, 2021).

Hoover et al. (2021) found that the top three siting criteria were driven by hydrologic, logistics and social criteria. Under hydrologic, stormwater management was mentioned the most (n=307) and mostly for runoff. Under logistics criteria, feasibility (n=270) or how it can be



conveniently done. Lastly under social criteria, community (n=143) was mentioned the most, despite this environmental justice only accounted about approximately 1.2% of all criteria and including heat, health and well-being only increases to 2.0% (Hoover, Meerow, Grabowski, & McPhearson, 2021).

## Types of UGI

### Urban Green Space

Urban green space (UGS) is defined as an urban land space that is partly or completely covered with some form of vegetation such as grass, trees, or shrubs. Excluding stormwater management, UGS is the most common type of UGI, they include some built environments such as community gardens, parks, and cemeteries, this can extend to rooftop gardens, vertical gardens, meadows, and woods (Haas, Hassink, & Stuiver, 2021; Zuniga-Teran, Gerlak, Elder, & Tam, 2021). UGS offers a multitude of different climate adaptation benefits to cities and their inhabitants. These areas tend to lack UGS, with more gray infrastructure, man-made built environment including asphalt and concrete/metal structures. UGS can offset greenhouse gas emissions, reducing UHIE, and lowering stormwater runoff (Haas, Hassink, & Stuiver, 2021).

### Urban Agriculture

Urban agriculture (UA) is a type of UGS that focuses on agriculture food production in urban areas that serve multiple purposes in neighborhoods. Urban agriculture, and to a smaller scale urban gardening, is a community effort. UA enhances community building; the farmers would have extensive interactions with different community members which can strengthen community relations and their respect for their community. UA can also serve as a meeting space for cultural and social gatherings (Diekmann, Gray, & Thai, 2020). Diekmann et al. showed that urban farmer markets are regular social gathering spots, where people mingle, enjoy food, and

interact with one another. Some gardeners have related this experience to a spider web, with benefits stretching across different areas (Diekmann, Gray, & Thai, 2020).

### Street Trees

Trees have a critical role in terms of the environment. The increase in impervious surfaces has led to the prevention of infiltration, the movement of water into the soil, and permeability, the rate at which fluid flows through a porous surface, process. Studies have shown that street trees are important in reducing stormwater runoff (Mullaney, Lucke, & Trueman, 2015). Trees provide mitigation efforts by storing and sequestering carbon, the more mature the tree is, increases its ability to store more carbon. The ability to remove and store carbon also improves air quality, air pollutants such as ozone (O<sub>3</sub>), nitrogen oxides, sulfur oxides, and carbon dioxide (CO<sub>2</sub>) can be absorbed by healthy and mature trees, 60 to 70 times more than by smaller trees (Mullaney, Lucke, & Trueman, 2015).

### Cool Roofs

Cool roofs or solar reflective is a passive system and are the most feasible measures that can be practiced. They have surfaces that reflect the sunlight, "...and emit heat more efficiently than hot or dark roofs, and therefore keeping them cooler in the Sun" (p. 3). Cool roofs operate in two ways, the solar reflectance or albedo, how reflective a surface is to solar energy. Second, thermal emittance which is the radiating heat that is emitted from the surface in the form of infrared or thermal radiation. Compared to green roofs, vegetation consolidated on roof tops, it is cheaper and easier to install and have greater feasibility in urban environments (Ashtari, Yeganeh, Bemanian, & Vojdani Fakhr, 2021; Li, Bou-Zeid, & Oppenheimer, 2014). Cool roofs work well in mitigating UHIE on a city scale. Li et al. (2014) found that to reduce surface UHIE

by at least 1 degree Celsius in the Baltimore-Washington corridor, a cool roof albedo would have to be high at .7 (Li, Bou-Zeid, & Oppenheimer, 2014).

### Environmental and Societal Benefits

Many of the environmental benefits of UGI overlap, for example the most common environmental benefit is the reduction of the urban heat island effect and stormwater runoff. This explains the multifunctionality of different types of UGI and how they work in tandem. Benefits such as air quality is also common environmental and health benefit, increased vegetation can remove particulate matter (PM). However, inequitable exposure to air pollution cannot be solved/eliminated with just UGI, it can only improve air pollution (Wroblewska & Jeong, 2021). They do lower the impact of UHIE, through their cooling effects through evapotranspiration or their reflective abilities.

There are countless studies that explore UGI beneficial to social health and overall well-being. They are an essential key to creating a healthy community. For example, there is evidence of a cooling effect from street trees as well, as they can provide shade to pedestrians (Turner-Skoff & Cavender, 2019). The size of the tree directly correlates to its cool effect, approximately 80%, which can reduce daytime temperatures by 5 degrees and 20 degrees Celsius. This improves social health and well-being by increasing outdoor participation (Mullaney, Lucke, & Trueman, 2015). Research has also shown that street trees, UA and UGA, “reduce negative thoughts, reduce symptoms of depression, better-reported moods, and increased life satisfaction” (Turner-Skoff & Cavender, 2019, p. 324). Citizens can see improvements in obesity levels, cardiovascular diseases, and mental illnesses (Kingsley & Ontario, 2019). The benefits of UGI are impacted by their availability, this includes the location and distance from neighborhoods,

the quality and quantity of the UGI, and the frequency of maintenance (The WHO Regional Office for Europe, 2017).

### Inequitable Distribution

Despite all the benefits that UGI present, research has found that UGI has inequitable distribution and is exclusive. Zuniga-Teran et al. (2021) found socioeconomic factors play the largest role in UGI inequities which include intentional urban planning, lack of equitable investment and lack of necessary urban infrastructure. Minority and lower-income communities are groups usually have the least amount of access to UGI. This could be attributed to historical practices such as redlining, which will be covered in Section 3. The second largest factor they found was from flawed urban planning, privatization of public spaces (covered in Section 3), and lastly failure in governance, citing the, “inadequate engagement with local communities in decision making is seen as a key element of the failure in governance that produces GI inequity and injustice” (Zuniga-Teran, Gerlak, Elder, & Tam, 2021, p. 238). Conway et al. (2022) found that Philadelphians who participate in UGI programs such as TreePhilly, Tree Tenders and Rain Check, tend to be young, highly educated, wealthier and mostly identify as White, living in detached homes. This could be due to the volunteering nature of these programs as residents have to reach out to obtain these services (Conway, et al., 2022). However, housing like rowhomes, do not have the space making tree planting unavailable whether they are intentionally approached or not.

## Chapter 3: Methods

### Critical Environmental Justice Framework

Critical Environmental Justice Studies (CEJS) is a framework built upon the work of other scholars across different fields that sometimes intersect (for example, Environmental Justice Studies, Critical Race Theory, Critical Race Feminism, Gender and Sexuality Studies,

Political Ecology, etc.), Pellow created this framework encapsulating four pillars (Pellow, 2018).

Each pillar consists of important limitations within environmental justice studies (EJS) that

question:

1. The degree to which scholars place emphasis on one or more social categories of difference (e.g., race, class, gender, sexuality, species, etc.) versus a focus on multiple forms of inequality.
2. The extent to which scholars studying EJ issues should focus on a single scale versus multiscalar analyses of the causes, consequences, and possible resolutions of EJ struggles.
3. The degree to which various forms of social inequality and power – especially state power – are viewed as entrenched and embedded in society, elements that must be confronted rather than embraced.
4. The largely unexamined question of the expendability of human and nonhuman populations facing socioecological threats from states, industries, and other political-economic forces (Pellow, 2018, p. 13).

Pellow's first point involves EJ scholars focusing on one or two aspects of social inequality.

An example is research that focuses on the importance of class versus race as drivers of inequitable distribution of environmental hazards (Pellow, 2018, p. 16). The second point looks at the scale and how EJS is not currently equipped to examine EJ on a multiscalar level. The notion is that EJ can be applied to multiple areas and scales and is not subjected to only one or two. An example would be how pollution is not focused in one area, pollution made in California will affect the air quality in surrounding states and physical environments (oceans, lakes, etc). Another example is US-based companies dumping toxic waste in China and other parts of the globe, affecting the citizens there (Pellow, 2018, p. 17).

The third point addresses how inequalities and power are embedded in society, whether that be political or apolitical, and how it should be to be confronted. Pellow argues that EJ scholars approaching the state to help mediate these issues is not the best strategy, as this could let the state keep its power that had produced the injustices. It is questioned if the state should be relied on as a "helping hand" or whether other paths should be explored (Pellow, 2018, p. 17). Lastly

the fourth point, Pellow makes the distinction that not only marginalized peoples are seen as expendable, but the entire population. He argues that expendability implies there is no escape, however, CEJ argues that those populations are “...marked for erasure and early death [...] CEJ counters the dominated perspective with a framework that contends that these threatened bodies, populations, and space are indispensable to building socially and environmentally just and resilient futures for us all” (Pellow, 2018, p. 17).

#### First Pillar: Intersectionality

Pellow stated that the first pillar (FP) recognizes social inequalities and oppression that intersect. This idea stems from the theoretical framework of intersectionality, first coined by Black feminist Kimberle Crenshaw, in a legal scholarship that gave attention to antidiscrimination laws that engaged with sexism and racism as separate rather than a system that works in tangent. Crenshaw argued that unidimensional laws do not acknowledge the experiences of intersecting identities. Black women share experiences with both Black men [Blackness] and White women [womanhood] but also experience distinct forms of discrimination that others do not (Remedios & Akhtar, 2019). Analyzing intersectionality critically, it could be understood as something more than existing with multiple stigmatized identities, but also understanding some of these identities in relation to Whiteness (particularly, in the United States) or other identities (Remedios & Akhtar, 2019).

The term White can refer to people who are of European descent or lighter-skinned people, who benefit from whiteness. Helms (2017) defines Whiteness as “the overt and subliminal socialization processes and practices, power structures, laws, privileges, and life experiences that favor the White racial group over all others” (p. 718). Whiteness can also be defined as being in a state of hyper-visibility that leads to invisibility, meaning White people are

able to exist outside the confines of racial identity. Countries that are built on the ideals of whiteness, such as the United States, create and use different institutions to uplift White people (Lindner, 2018, p. 44). With these definitions, it can be determined that anything not related to Whiteness will be met with scrutiny.

Pellow's FP stated that CEJ, "...views racism, hetero-patriarchy, classism, nativism, ableism, ageism, speciesism...and other forms of inequality as interesting axes of domination and control" (Pellow, 2018). Pellow emphasizes how these systems work together to ensure that the state quo remains intact, the intersection of power, which can be found in many institutional practices. Intersectionality does not concern just social identities but also institutional and political inequalities and is necessary to challenge and change the intertwining power dynamics that control the injustices (Amorim-Maia, Anguelovski, & Connolly, 2022). To understand this more, the domains-of-power framework (hereafter, the domains) is used to investigate the organization of power relations. It can be used to focus on a singular aspect of the oppressive system and/or, how they intersect (Hill Collins, 2017).

The domains have four parts. The first is *structural domain of power*, public policies that categorize and control the social institutions, i.e., banks, insurance companies, policies departments, schools, stores, and government agencies. Next, when people are following the rules that uphold the social hierarchy, or not, their actions and agency help form the *disciplinary domain of power*. This could be described as surveillance, having other people watch another and self-discipline themselves. Third, the *cultural domain of power* refers to social practices that help form the dominant social class ideas that justify the inequalities and the counter-dominant ideas that criticize the system inequalities. Through all media types (traditional and social), and school curriculums, "...the cultural domain constructs representation, ideas, and ideologies about social

inequality” (Hill Collins, 2017). Lastly, the *interpersonal domain of power* includes the different experiences that individuals face within the intersecting oppressive system (Hill Collins, 2017).

The domains are used as an investigative tool because all the domains are present and influence the organization of power within any social condition. Hill (2017) uses the example of the suppression of the Black and Latinx vote during the 2016 U.S. Presidential elections across all four domains. Through structure domain (1), they legally created ineligible voters; disciplinary domain (2) created and spread fake news about voter fraud with no evidence creating the perception of unworthy citizens; cultural domain (3) created a hostile environment for low-income Latinx and Black voters, like moving their voting booth further away (Pitzer, Gunn McClendon, & Sherraden, 2021) or placing them in potential harmful areas (police stations), and interpersonal domain (4), was in the encouragement of White citizens to intimidate racialized voters (Hill Collins, 2017).<sup>2</sup>

A subsection of intersectionality, climate intersectionality, or intersectional climate justice, highlights how climate change impacts individuals or groups due to their social positioning. Looking at climate change through an intersectional lens could illustrate the complexity of overlapping identities and how climate change can amplify these inequities which can be highlighted in policies (Gutterman, 2022). For example, the ‘racialization of space’ and the ‘spatialization of race’ in UGI planning refer to how the landscapes are created with racist or prejudice intentions of people’s behaviors, surveilled, and exclusionary practices across space. Meaning certain areas are deemed Black areas or Whites areas, which imposes the safety of these areas (i.e., “Black areas” are usually deemed as dangerous areas). The creation of the White-

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<sup>2</sup> In 2016, the Southern Poverty Law Center reported 201 incidents from social media posts and direct submissions (Southern Poverty Law Center, 2016)



centered residential class through discriminatory exclusionary practices has led to such things as devaluing neighborhoods of racialized peoples which has an impact on UGI development so that the availability of green or open spaces can be an indicator of the neighborhood's demographics (Hoover, Meerow, Grabowski, & McPhearson, 2021). The physical impact would be the clear temperature difference between areas with green spaces and neighborhoods without. Climate change acts as a magnifying glass on society, exposing the inequities embedded in the system and multiplying the impact on people sitting in the intersections of identities.

### Second Pillar: Scaling

Pellow's second pillar focuses on the role of scale in creating the problem and a possible resolution of environmental injustices (Pellow, 2018, p. 20). EJ literature does examine the relationship between "thinking globally and acting locally" (p. 20). This includes both spatial and temporal dimensions, "...of how objects, ideas, bodies, beings, things, and environmental harms and resilient practices are linked, how they are connected ecologically" (Pellow, 2018, p. 20). According to Pellow, most EJ studies are only analyzing one scale, for example, a single neighborhood or specific data (i.e., census). However, Pellow notes that some EJ scholars do use multiple scales, such as how organic pollutants produced several thousands of miles from the Arctic was found in high concentrations in Nunavik women (p. 20)

Not only does CEJS examine scale (size and space), but also temporal dimensions and historical context. Pellow used the example of how coal-fired power and other harmful polluting petroleum-based economies development are the cause of the social and ecological issues of today. Indigenous Peoples and Black-American communities have long faced the brunt of climate change due to Indigenous Peoples' land being targeted for oil drilling and Black Americans being more likely to live near coal-fired plants. CEJS emphasizes that multiscale

methodological and theoretical approaches will strengthen understanding of the complex spatial and temporal causes and consequences (Pellow, 2018)

### Third Pillar: The State

Pellow's third pillar deals with how social inequalities, such as racism and sexism, are embedded into the fabric of society and upheld by the state (federal government). An example would be the evolution of slave patrols to modern-day policing. Brucato (2020) explains that the abolishment of slavery that led to the migration of escaped and freed enslaved peoples prompted three responses: (1) the segregation of work and labor among the working class between White and Black Americans; (2) race riots that White citizens were conducting in segregated neighborhoods; and (3) the founding of modern-day policing (p. 133). It became impossible for the state to manage without them; in addition, white participation was necessary because it could not have existed without it, whether it was professional and/or voluntary assistance. The need for white participation most likely stems from the state needing agents for their racist practices. Under a perceived threat of insurrection from the former enslaved, it was seen as justifiable act for the white population and a necessary action for the state to grow and maintain its power. There exists a flawed symbiotic relationship between the state and the White population, as Brucato (2020) stated, "...police, capitalism, race and citizenship were locked in a co-constructive relationship and [a coadaptive relationship that] has persisted up to our current time in this country" (p. 133).

The goals of environmental/climate justice (ECJ) are difficult to achieve due to the current social order. Pellow suggests that ECJ and other social movements should work beyond the state to reform through incremental changes. His argument is more anarchic, as he emphasizes the way the current system is inadequate for ECJ or any type of social movement. He

says that the state cannot function as an ‘anti-socioecological’ or ‘pro-socioecological’ player, simply supporting the relationship between the environment and society. Pellow does not believe that ECJ, or any social movement, should wait for the state to deliver justice, police itself, and regulate the industry. Many studies have illustrated countless times that state-based actions for the “benefit” of marginalized people have not always benefitted them. Such as increasing UGI in racialized communities can lead to green gentrification or the displacement of people due to urban greening efforts (covered in Section 3). For the ECJ movements to be successful, this system must be left behind. He suggests using institutions and practices that rely less on the state and shift more toward deepening *direct democracy*.

Direct democracy, or pure democracy, refers to the form of democracy in which the people are directly voting on proposed constitutional amendments, laws, treaties, or policy resolutions without the use of a representative. This way of practice achieves actual representation of the population because representatives are not obligated to create policies based on the beliefs of their constituents but are encouraged for reelection. When invoking the third pillar, Pellow urges ECJ scholars and activists to weigh the pros and cons of embracing the state and seeking their interventions. Pellow states that the ‘purpose’ of the state is repression, and hoping for progressive reform from the repressive state is futile (p. 24).

There is some pushback for this critique, Purucker (2021) argues that ECJ activism needs to view the state as a contested field of power, or a system that is competing for influence and control, which may support the oppressive social relations but is not destined to this path (Purucker, 2021). Purucker (2021) explains working beyond the state is not feasible because, it has not been done. There is not an ‘extra-state institution’ with the power to shut down various global contributors to fossil fuel emissions. If there were such an entity, it would come into

conflict at some point. Purucker states that the ‘weaknesses’ in Pellow’s third pillar can be attributed to the “... [reifying of] the state as a singular entity” (p. 182). The functionalistic views of Pellow, as described by Purucker, contribute to this narrative as Pellow treats the state as a purely oppressive system, that is a monolithic and an ‘all-powerful entity’ that social movements cannot defeat nor dismantle. Purucker contests any implication that the state is inflexible to change. He argues that environmental justice scholarship needs to move beyond direct struggles to include more class-wide movements. Purucker suggest that the base of ECJ movements is too focused on ‘livelihood’, and not in class struggle. Purucker stance then lacks an intersectional perspective and assumes that both issues cannot be addressed as the intersection of class and race shape lives differently.

When Pellow invokes the third pillar, he wants scholars and activists to be mindful of positive and negative consequences in working with the state. He believes that building relationships, coalitions, movements, and strong democratic processes, people will become less dependent on the state. The anarchical ideas surroundings Pellow’s third pillar should not be dismissed, even though the common misconception of anarchist of being chaos and recklessness (Toro, 2021). The state is perceived as orderly, civilized, even though it has participated in numerous evil deeds for its own self-interest. The founder of social ecology, Murray Bookchin stated that, “[the State is] unnatural and runs counter to the thrust of evolution,” (Toro, 2021, p. 196).

#### Fourth Pillar: Indispensability

Pellow’s fourth and last pillar centers on a concept he refers to as indispensability. This pillar aims to challenge scholar John Marquez concept of ‘racial expendability’ that argues that black and brown bodies are, in the eyes of the state, viewed as criminals and deserving of violent

treatment. Marquez and many other ethnic scholars agree that white-dominated societies consider people of color to be expendable; policymakers and institutions create and continue environmental racist practices (Pellow, 2018). These populations are constantly compared to trash and waste, so the placement of heavily polluting industries would be an appropriate move for the state. However, racial indispensability argues that white communities have always benefitted from and were dependent upon communities of color. A more positive perspective is that communities of color are members of this society, are members of the socioecological systems and thus are important to the collective future (Pellow, 2018).

This should not be confused with the assimilationist perspective which can be violent and forceful to incorporate 'others' as they see fit in society. Pellow honors the EJ and ecological principles that all things (human and non-human) are interconnected, relying on solidarity from others for support. Nor should indispensability be confused with functionalistic views as this framework negates the understanding that society does change overtime, and will be in conflict at points, but most importantly it suggests that inequalities within society may be positive thus not needing to change (Pellow, 2018). Indispensability argues against this as it, "...focused on securing justice and sustainability in a highly unjust and unsustainable system" (p. 27). Pellow quotes Naomi Klein, "To change everything, we need everyone", this slogan is regarded as the key aspect, because it shows people are not just beings that exist within the human and non-human worlds but also *agents*. Everyone is linked, and everyone has some level of agency to change history (Pellow, 2018).

The impacts of climate change are unevenly distributed across different demographics, people of color, the poor, Indigenous peoples, vulnerable people of the Global South, and women. Climate change is a mass disruptor of life and health for non-humans as well and despite

evidence sorting such mass disruption fossil fuel companies, national governments, and conservatives continue to invest in climate denial. Using the first pillar, intersectionality, I will examine the intersection of urban agriculture and racialized communities. The second pillar, multiscale concerns, I analyze the three scales of UHIE: neighborhood scale, city-scale and regional scale. The third pillar, the state, I look at how and why a city run program, land bank's practices of selling former vacant lots, may not be beneficial to environmental justice. Lastly, the fourth pillar, indispensability, I will investigate specificity versus universality and how it UGI could lead to green gentrification.

## Chapter 4: Applying CEJS

### First Pillar: Urban Agriculture

The first pillar of Pellow's work involves intersectionality, the understanding that the intersection of identities has an impact on social interactions and interactions with the system. Urban farming or urban agriculture (UA) is a type of UGS that allows urban residents to receive food sustainably. UA is multi-beneficial, not only will residents receive fresh local produce but climate-adaptive and mitigative properties. UA increases the vegetation which can improve air quality; however, it is important to understand that air pollution cannot be solved with just UA. Community gardens may be able to retain approximately 12 million gallons of stormwater due to soil amending practices and composting activities (Gittleman, Farmer, Kremer, & McPhearson, 2017). In addition, UA provides low-income households affordable access to fresh farm crops.

The United States Department of Agriculture (USDA) reports that approximately 95% of farmers are White men. (United States Department of Agriculture, 2019). Black Americans (BA) only comprise 2% of farmers, owning 0.5% of farmland and 0.2% of agriculture sales. Since the end of slavery, BA have been stifled economically and self-sustainability in the agriculture sector

(Carter & Alexander, 2020). In addition, an examination of how power dynamics influence people's intersecting identities (Wyatt, Johnson, & Zaidi, 2022, p. 863).

Pilgeram (2022) examines the different characteristics of U.S. agriculture through spatial distribution, the average number of acres, and crop types. Their previous research about gender in agriculture has been largely focused on White Women (WW). Due to the inaccessibility to more quantitative data, which is only available through the USDA, there is a limit on the wider perspective of farming (Pilgeram, Dentzman, & Lewin, 2022). The white-centeredness of agriculture stems from the hegemonic visions of race, gender, class, and sexual orientation. Dentzman et al. (2020) found that 1.2% of farmers are queer (Dentzman, Pilgeram, Lewin, & Conley, 2020). The pervasive ideal image shows that "... (white) men are the farmers and their (white) wives are their helpmates", while their children (sons) inherit the farm and their daughters are left behind or marry into another agricultural family (Pilgeram, Dentzman, & Lewin, 2022). While this image needs to be dismantled, it is important to understand that it creates real and persistent barriers. Changing the perception of what agriculture is and what it can be, should be explored through intersectional agriculture and food justice.

### Intersectional Agriculture

Intersectional agriculture aims to defeat these barriers. It "... represents the trend toward agricultural practices, food distribution, and consumption activities that explicitly seek to address, resist, or counter agri-food issues at the intersection of race, class, gender, and sexuality" (Smith II, 2019, p. 178). We can also look at intersectionality as not only about identity, but also addressing multiple issues facing racialized urban communities. In this case, UA addresses multiple issues such as food deserts, food justices, and food sovereignty. Many

citizens have turned to UA to alleviate the unmet food needs of city residents, particularly racialized and low-income families (Ahmed, 2015).

The expansion the suburbs can be tied to the prevalence of food apartheid.<sup>3</sup> Suburban residents have more buying power which attracts supermarket chains. Despite local government (the city) knowing there's an absence of grocery stores in low-income areas, they tend to wait for the development to occur. These low-income neighborhoods tend to be majority Black and Latinx, the lack of grocery stores lead to more cases of obesity with more fast-food restaurants (Crowe, Lacy, & Columbus, 2018; Palmer, 2018). Even when grocery stores or supermarkets are available to Black Americans, they have lower quality or have products that lower-income Black families cannot afford. The acts of resistance from Black people and communities, in response to food injustices, is an opportunity to heal and care for themselves and others. Especially during and post-COVID-19, which extremely limited the already limited food resources (Gripper A. B., 2023).

The multifunctionality of UA allows it to cross multiple planes of inequities. The food justice movement is a response to the disparities in food access and views it as a systemic issue stemming from structural racism, (Heynen, E., & Trauger, 2021; Smith II, 2019). The food justice movement emerged from the 2007-2008 global 'food crises' to address global and local inequalities in food production. Usually, food production is not associated with UGI, even with the widespread evidence of such benefits as flood control, water flows, temperature control, and recreation. Its co-benefits are overlooked as UA can create food sovereignty, the right of people

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<sup>3</sup> Food apartheid is different from food deserts, it highlights the structural factors that create inequitable and inadequate food systems. See Gripper (2023): "Practices of Care and Relationship-Building: A Qualitative Analysis of Urban Agriculture's Impacts on Black People's Agency and Wellbeing in Philadelphia"



to have healthy and culturally appropriate food that is ecologically sound and sustainable. (Evans, et al., 2022; Clendenning, Dressler, & Richards, 2016).

In Philadelphia, neighborhoods that have a higher concentration of Black people, and lower-income neighborhoods, tend to have more community gardens which may be a manifestation of ‘collective agency’ and ‘community resistance’ in those communities (Gripper, et al., 2022). This collective energy is the most valuable and gives UA momentum as a vital justice tool. The failure to incorporate more socially conscious practices within UA has a high probability of it perpetuating inequities in food and the environment (Reynolds & Cohen, 2016). This could include allowing UA to serve as an economic opportunity rather than a social progressiveness. However, it is important to understand that UA may not be accepted by racialized communities, particularly Black and Latinx, with negative connotations surrounding farm labor which makes it difficult to increase UA participations among these groups (Cunningham, 2021).

### Second Pillar: Urban Heat Island Effect

The second pillar examines the role of scaling, this includes examination from a spatial dimension and also a historical dimension. Applying multiscale research to the Urban Heat Island Effect (UHIE) helps to illuminate how equitable distribution of UGI will benefit surrounding neighborhoods, cities, and regional climates. Urban heat island effect, or UHIE, is a phenomenon in which the urban area is noticeably warmer compared to the surrounding rural area due to human activities. When natural land is replaced with impervious surfaces and buildings, more stored heat from solar energy of a surface is emitted compared to lighter colors (5% and 30%, respectively) (Xie, Wang, & Feng, 2015). Impervious surfaces, like asphalt, lower the albedo or reflective percentage thus increasing the daytime and nighttime temperatures.

UHIE can be examined at multiple scales and each scale can visualize how UHIE impacts these areas.

### Neighborhood Scale

Neighborhood scales can be used to compare UHIE and determine why and how those neighborhood heat indexes differ. Research shows that neighborhoods with a larger percentage of low-income and communities of color residents tend to be the hottest (Hoffman, Shandas, & Pendleton, 2020). The variability can be contributed to how well a neighborhood is equipped with heat-dispelling structures like trees and white roofs. The unequal distribution of local UHIE is the result of decades of systemic disinvestment led by the government and private sectors. Practices such as redlining, and the discriminatory practice of the systemic denial of housing and financial services (i.e., mortgages and insurance loans), have greatly contributed to the neighborhoods UHIE (Hoffman, Shandas, & Pendleton, 2020).

The creation of the Homeowner's Loan Corporation (HOLC) and the Federal Housing Administration (FHA) under the New Deal provided financial support to homeowners with hopes to increase homeownership during the Great Depression. The HOLC created the well-known appraisal map which included a racial component, the FHA relied on the appraisal for risk assessment which barred individuals from receiving mortgage insurance if they were from these "risky" neighborhoods (Hoffman, Shandas, & Pendleton, 2020). These risky neighborhoods usually contained Black Americans, low-income, Jewish Americans, older housing, etc., and would consistently receive a fourth-grade or 'hazardous' rating (Wilson, 2020). Despite redlining being banned in the US as part of the Fair Housing Act of 1968, there are still lingering impacts in these neighborhoods. These public and private practices led to the disinvestment and

discriminatory construction of roads and highways through these neighborhoods which increased the impervious surfaces (Karas, 2015; Mohl, 2004).

Redlining also impacted how urban tree canopies were distributed across neighborhoods which also affected the temperature of the neighborhoods (McDonald, et al., 2021). Hoffman et al. (2020), examined land surface temperature (LST) in 108 urban areas and found that about 94% of these neighborhoods, redlined and non-redlined, varied significantly in temperatures. The average gap was approximately 2.6 degrees Celsius (36.68 degrees Fahrenheit) (Hoffman, Shandas, & Pendleton, 2020). A current example of the impact of redlining that led to the disproportionate distribution of UHIE is Hunting Park, Philadelphia (Philly), PA. Hunting Park is a neighborhood in North Philadelphia that is reported to be one of Philly's hottest. It also happens to be one of the most impoverished and has more communities of color (mainly Latinx and African American residents). 'Philly's City Planning Commission found that more than 75% of Hunting Park is covered with buildings, roads, and paved surfaces, with tree canopies covering approximately 9% of the neighborhood. Hunting Park can reach temperatures about 22 degrees F hotter than other neighborhoods (City of Philadelphia, 2019).

Before redlining was banned, Hunting Park was graded as a level "C", "Definitely Declining" out of the five available ratings of "A": Best, "B: Still Desirable", "C: Definitely Declining", "D: Hazardous" and "Commercial/Industrial" (Hoffman, Shandas, & Pendleton, 2020). In contrast, Chestnut Hill, located in Northwest Philadelphia, historically was graded as "A: Best" or "B: Still Desirable", and has about 55% or more existing tree canopy. Chestnut Hill is 73% non-Hispanic White, with a median household of \$122,216; compared to Hunting Park which has a high racial minority and a median household income of \$25,000 or less (U.S. Census Bureau, 2022; City of Philadelphia, Office of Sustainability, 2019). About 70% of housing in

Hunting Park was built before the 1950s, which produces a housing cost burden as they struggle with weatherizing their homes for better insulation for heating and cooling (City of Philadelphia, Office of Sustainability, 2019). Despite Philadelphia's efforts to increase the tree canopy in historically disinvested neighborhoods through TreePhilly, tree planting is still predominately done in white neighborhoods, particularly Northwest Philadelphia (McCullough, 2019).

### City Scale

The city scale includes all residential, commercial, industrial, and transportation sectors plus the population. (Ouyang, et al., 2022) According to the U.S. Census Bureau, about 81% of U.S. citizens live in urban areas, which creates some different impacts. Urban development and economic and industrial activities in urban spaces produce waste such as vacant land. Vacant land is caused by decentralization (from demographic, urban sprawl, deindustrialization, and residential choices and abandonment) and can lead to lot vacancies. Vacant land can be defined as under-utilized lands that consist of bare soil, abandon buildings and structures, brownfields, and greenfields (Kim, Miller, & Nowak, 2018).

As explained previously, when natural land is replaced with impervious buildings and surfaces, it impacts the radiative balance and surface energy; meaning they absorb and emit heat which affects evapotranspiration (the process of evaporation from bodies of water and transpiration from plants). Without these processes, the "cooling effect" is decreased thus leading to higher temperatures. Many cities have been plagued with an abundance of vacant lots; Newman et al. (2016) found that 16.7% of large cities were consider vacant. About 4% are unoccupied city addresses (Newman, Bowman, Lee, & Kim, 2016).Deindustrialization was the one of the reasons for the abundance of these vacant lots, for example, Philadelphia, after World War II led to the increase of vacant lots in the city, as the population dropped from 2,000,000

residents to 1,500,000 (Sinclair, 2022). According to the City of Philadelphia, there are 30,000 - 40,000 vacant lots within the city and over 74% are privately owned. Even though vacant lots are located all over cities, in Philadelphia they tend to be in areas that have a high poverty rate, lower employment, and lower median household income (Pearsall, 2017).

Greening these vacant lots in Philadelphia, and other cities in the US would increase the albedo and evapotranspiration thus cooling the surrounding area. However, cities ought to be put in safeguards where greening projects are located and the impact they will have on the residents. If vacant lots turn into greening lots, it could attract new real estate which could push out low-income residents, who are usually comprised of mostly racialized people.

#### Regional Scale

As stated previously, the urban heat island effect (UHIE) is caused by increased urbanization and amplified by climate change, the physical environment (the infrastructure) does enhance the issues as well (i.e., asphalt surfaces, less vegetation, and gray infrastructure). There are two types of sources to collect data: air temperature data monitored through weather and land surface temperature (Shi, Xian, Auch, Gallo, & Zhou, 2021). However, UHIE-related impacts, called UHI regional impacts (UHIRIP), look at UHIE impacts regionally including environmental consequences such as heat waves, biodiversity loss, and poor water quality.

There is a plethora of data and research about the impact of UHIE in urban areas. Most of this research focuses on the impact UHIE has on city residents, however, there is some research that examines how UHIE can impact the regional area. Both Zhang et al. (2013), and Cosgrove & Berkelhammer (2018) examine thermal pollution and downwind footprint of urban heat islands in air temperature and their possible impact on weather patterns. Zhang et al. (2013) focus on thermal pollution from large energy consumption in metropolitan areas with

populations in the millions. Since fossil fuels are still the primary source of energy in cities coupled with the growth of urbanization and the increasing populations, there may be some evidence that UHIE could impact the surrounding region.

Zhang (2013) found some evidence that anthropogenic activities in metropolitan areas alter the jet streams and other atmospheric systems across the Northern Hemisphere (North America and Eurasia). The excess “waste heat” created within the urban environment such as mass transit, infrastructure (buildings and roads), and other sources has caused winter warming of about 1 degree Celsius (1.8 degrees F). This, however, had the opposite effect on Europe which cooled the area by the same degree. The total human-produced waste heat is approximately 0.03% and has little global impact but has a regional impact, such as the Great Philadelphia Region.

One example of multiscale research on UHIE is Zhang et al., (2009; 2011) conducted an observational and model study based on the Washington-Baltimore corridor to analyze how upstream urbanization (the direction of the wind) impacted the region. The study found that upstream urbanization from Washington and Columbia had a 2-to-4-degree Celsius warming impact on Baltimore due to the different wind directions. DC is a larger metro area compared to Baltimore, which could explain how the UHIE could travel far upstream. A similar study conducted by Cosgrove (2018) in the Chicago metro region showed that downwind can have a regional impact, in this case affecting Lake Michigan. They found that UHIE created a “heat plume” over the city which is carried by the directional wind. Cosgrove (2018) added to the previous research by Zhao et al. (2014), in which they explain the scale of the UHIE is greatly determined by how well an urban surface can move heat upwards and away from the city, or

simply its heat displacement. This usually depends on the topography (is it hilly or flat?) and the city spatial structure.

The issues that persist at the neighborhood level will impact the greater region. Looking at UHIE in a multiscalar perspective allows us to understand the accumulation of systemic issues plaguing cities. Cities that do not address the decades of inequalities towards racialized communities will extend those issues to the broader population.

### Third Pillar: Land Banks

Pellow's third pillar deals with how social inequalities, such as racism and sexism, are embedded in the society and upheld by the State. To solve the vacant lot issue, many cities in the U.S. have implemented land banks. Land banks are, "...government or nongovernmental nonprofit entit(ies) established, at least in part, to assemble, temporarily manage, and dispose of vacant land for the purpose of stabilizing neighborhoods and encouraging re-use or redevelopment of urban property" (US Department of Housing and Urban Development, 2012). They can acquire these lands through auctions or sale of tax-delinquent and foreclosed properties. The largest part of land banks duties is to dissolve back taxes or tax liens and put it back on the market. They also offer communities the opportunity to own land, and repurpose it for their benefit, however, according to Pellow's third pillar, city run programs to create UGI in urban lots would not yield EJ because of state involvement (Blumgart, 2023).

Land banking in Philadelphia have strong ties to urban agriculture (UA), after its successfully approved *Land Bank Strategic Plan & Disposition Policies*, which included, "...a goal to reinforce open space initiatives and increase urban agriculture," (Stanko & Naylor, 2018, p. 472). The success of Philly's Land Bank is due to organization around UA, which influenced the written policy. There are three main purposes for revitalized lands: (1) residential or

commercial development; (2) side yards for additional space for residential owners; and (3) for gardens, individual or community. Stanko & Naylor (2018) conducted interviews and found two main coalitions that advocated for the creation of the Land Bank. The first coalition was mostly comprised of community development professionals, private industry, and large non-profits. The second coalition included UA advocates, unions, neighborhood groups and disability rights activist (Stanko & Naylor, 2018). While the grassroots activism is great and should be praised, Stanko & Naylor point out this type of organizing is “fleeting and dependent on creating temporary coalitions”, (Stanko & Naylor, 2018). Once initial demands are met, it will require higher levels of advocacy and bureaucracy, rather than creating a seat at the table. The policy priorities of land banks depend on how they are structured in local legislation, there also exist political and economic influences (Blumgart, 2023; Center for Community Progress, 2021).

Pellow’s third pillar describes how the state involvement in the justice process prevents justice from occurring. In the case of the Land Bank of Philadelphia, or any land bank across the country, there lies some ambiguity to its future. While the Land Bank does allow for the securing of rights to the vacant land, the fate of the vacant land is still in some ways controlled by the city government. In cities like Philadelphia, Pittsburgh, St. Louis and Cleveland, local politicians have the significant power over land banks and land transactions. In some cases, the city will acquire the land influenced by power brokers, have no tangible plans, then will give officeholders veto power pertaining the decisions about the land the land bank is holding. In Pittsburgh, every transaction must be signed by the City Council for approval, this inevitably slows down the process. Another mistake typically make is having land banks operate within the redevelopment authority, because of the bureaucracy and set policies it can undermine land banks community justice functions (Blumgart, 2023; Center for Community Progress, 2021).



This does not mean that land banks are necessarily bad, but they can be riddle with strife as they do not have to use the land for UGI purposes or any other uses to help communities. For example, if a developer wants to build high-end condos to replace vacant homes, but residents want a community/urban garden the land banks can make that choice, even at a lower bid. Rosan and Pearsall (2018) point out how the institutionalization of UA may lead to more oversight and regulations (Rosen & Pearsall, 2018, p. 95; Stanko & Naylor, 2018). In some cases, residents may not receive what they have requested, especially if the city deems somethings of more importance such as economic and residential development. The state should not be the blocker of progress but the conduit for better equality by allowing the most vulnerable to guide state action as they are the ones that suffer the most from its inaction.

Land banks should make it more clear how the land should be used, if these vacant lands are in racialized communities, then the focus should be how to uplift the community. The National Land Bank Network Act (Land Bank Act) (H.R. 8786) was introduced in 2022 with the goal of standardizing some of land banks practices, with a better focus on historically disenfranchised communities. A particular function that would be introduced would be through the Lank Bank Act is data collection to evaluate land banks activities and outcomes, plus supporting engagement between land banks and residents. There is no say in whether this would ensure equity, but standardization could help in cities where environmental justice is not apparent in their land bank's policies (Rep. Daniel T. Kildee [D-MI-5], 2022).

#### Fourth Pillar: Green Gentrification

Pellow's fourth pillar argues that people should be seen as indispensable, as agents seeking to change the course of history. As stated previously, everyone needs to be involved for there to be viable environmental justice, but there should exist some specificity in targeting

specific communities. When certain communities are left out of the process and excluded from important climate adaptation phenomena such as green gentrification occur. Green gentrification is, "...when the installation of new, improved, or remediated urban green space attracts increased investment and developer attention, forcing residents who are unable to adapt to the increased cost of living to relocate" (Sax, Nesbitt, & Quinton, 2022, p. 373). This can exist beyond physical displacement and/or through exclusion, such as increasing barriers to entry. All residents deserve to have equitable access to UGI features but should not come to the expense of losing their housing or cultural upbringing. Cities urge to increase UGI has allow for these injustices (Anguelovski, Connolly, Pearsall, Shokry, & Checker, 2019; Wolch, Byrne, & Newell, 2014; Sax, Nesbitt, & Quinton, 2022).

Sax et al. (2022) identified three key aspects of green gentrification: (1) sustainability practices that influence urban greening (conceptual foundations); (2) dominate sustainability practices and frameworks to design and implementation; (3) the change in local social parameters and relationships (socio-spatial change) They concluded that cities need to make considerations for the impacts and outcomes of introducing new development. But they state that green gentrification cannot be approached solely on the impacts but also on how systemic injustices enable these practices. One-way green gentrification is started through is the greening of vacant lots.

Rigolon et al., (2021) study showed that the transfer of private ownership from city-owned, in Chicago, had led to better vacant lot care. Through the vacant lot greening/reuse programs (the transfer of city ownership to private ownership to either create open green spaces or reuse them) they found that new lot owners could be more connected to their communities, thus motivating them (Rigolon, Banerjee, Gobster, Hadavi, & Stewart, 2021). Unfortunately, in

Philadelphia, there are more private owners, and the majority are tax delinquent, which impacts the whole city's revenue (Eichel & Ginsberg, 2019). Another problem that is encountered with greening vacant lots is the pricing influence it has on surrounding areas. Lin et al., (2022) found that greened vacant lots within 1000 feet increase housing prices by 4.3% (Lin, Jensen, & Wachter, 2022). This study also found that greening of vacant lots in declining neighborhoods is more likely to be chosen, this study does not include how they increase compared to more wealthy areas. Greening in these neighborhoods could lead to green gentrification, an increase in housing prices and property value (Lin, Jensen, & Wachter, 2022).

Indispensability is the idea that all humans and non-humans' life has the right to exist. Green gentrification is deliberate, showing that not all life has the right to live, grow or just be where they stand. Green gentrification does not just occur, it is planned and executed on the expense of other people's lives. In some cases, properties are chosen and developed without any say from communities that surround it. Viewing people, especially racialized people, as indispensable would allow for faster progress, as we all need to work together for the common good. It is as though cities are just competing to be the greenest, with the limited amount of space the encroachment in spaces would be evitable. The least responsible groups of climate change face, i.e., racialized, and low-income people face "double inequity or double injustice" as they are the most vulnerable to the impacts (Shokry & Connolly, 2020, p. 3). Greening, UGI or any other terms the process goes by is shown to be inherently good and beneficial for everyone, frequently ignoring the many historical contexts. Ignoring the past does not yield justice, as it prevents the actual learning and growth process.

## Chapter 5: Discussion

My purpose for writing on this topic is to understand how to address inequities in UGI development and distribution: (1) understand historical practices that created inequities (2) use CEJS to critique UGI (3) Use CEJS to offer solutions. This research focused on answering three questions: *How did inequities in access to UGI develop in racialized communities? The overall benefits of UGI for racialized communities? Lastly, how to rectify the wrongs, is it feasible under the context of CEJS?*

*RQ1: How did inequities in access to UGI develop in racialized communities?*

Using Pellow's Second Pillar, multiscalar, I found through historical context that practices of redlining have an impact on today's UGI development. Particularly with tree canopy coverage and UGS distribution. Despite redlining being deemed illegal, the ascribed grades of neighborhoods continued to live on through the disinvestment in these communities. This led to the continually lack of implementation of UGI. Now that developers are looking at these neighborhoods to develop more UGI, it has created a new issue of green gentrification that pushes out existing communities for more wealthy and usually white residents.

*RQ2: The overall benefits of UGI for racialized communities?*

. The basic benefits would be the reduction in UHIE, improvements in mental and physical health. In racialized communities these benefits are desperately needed. When looking at specific UGI, UA has many benefits for not just racialized communities, but low-income communities as it increases access to health and fresh food. Communities that are in food deserts or are food insecurity can produce or receive food that is locally grown. UA also assist with flash flooding, especially with the utilization of rain barrels or other water catching systems. It is a great way for people to learn how to be self-sufficient when there is no assistance. The removal

of vacant lots can beautify the neighborhoods, this could be achieved through UGS such as open green space, community/urban farms, playground/parks, etc., in addition this will help to alleviate the unequal distribution of UHIE impacts. Cooling the area with UGI can enable people to enjoy their neighborhoods, creating safe areas for children to play and people to improve their physical and mental health. Also allows non-human creatures to reside in these areas, great for exploring and learning about nature.

*RQ 3: How to rectify the wrongs, is it feasible under the context of CEJS?*

How does a city rectify the decades of disinvestment through old practices such as redlining? A lot of damage has been done, and city officials know this and continue to ignore the root cause of the issue. CEJS is interdisciplinary and multi-methodological, inspired in activist-scholar practices that bridge and blur the boundary between academia and communities (Pellow, 2018). CEJS is one of many ways to combat the injustices of the system, using it to critique UGI development and implementation has unveiled many problems areas. Using CEJS I recommend four steps that should be taken before and during the planning, development and implementation stages.

- (1) Research: UGI is multifunctional by design, many UGI features such as UA and UGS serve multiple purposes to the public. I would implore urban planners, independent or public, to require research of the specific needs of the area they want to develop. For example, an area with high vulnerability to flooding and UHIE should receive UGI that will help alleviate. They should look at the racial and income demographics of said neighborhood. What are the current issues that are affecting this neighborhood? Could it be solved with UGI or other interventions? Would the residents of these communities be willing participants in UGI projects? Blindly putting UGI in

neighborhoods/communities will not solve anything. It must be thoughtfully planned out in accordance with the community it will be serving.

- (2) Explore: Examining the scale of UGI development. Will the development be centralized in one area? UGI needs to be scaled so that it is incorporating the impact on the entire city. Temporal or historical scale should be included, knowing if the neighborhood was rated “Definitely Declining” or “Hazardous” in terms of redlining. Background knowledge should assist in the decision-making process and locate decades of injustices. They should look at how it will impact the area in the future as well. Will the UGI have a positive impact on the future of these neighborhoods?
- (3) Accountability: The state, in this case the city, must look at the past unequitable practices that have allowed for urban planners to disregard racialized communities/neighborhoods. City’s need to strive to come to terms with the past, and actively be antiracist.<sup>4</sup> The role of the city is to protect its resident, especially the most vulnerable. Equity teams should be created to ensure all greening plans are not aiding in disenfranchisement. City should require independent developers to have equity teams to evaluate how UGI will impact the future of these neighborhoods/communities. The city should be in consistent contact with residents during all stages, this could be physical community meetings with updates and delays. Entities like land banks should take suggestion from the neighborhood/communities for the most appropriate allocation of unused and vacant properties. I implore that the city reevaluate how property value and tax fluctuate when UGI is put in place.

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<sup>4</sup> Range of ideas that encompasses ideas and political actions that combat racial prejudice, systemic racism, and racial oppression. See Smithsonian, “Being Antiracist”: <https://nmaahc.si.edu/learn/talking-about-race/topics/being-antiracist>

(4) Indispensability: Everyone is a participant in the socioecological system, present harms to communities that are seen as expendable are self-defeating. For change to happen, all people and institutions need to work together. However, with green gentrification we see that racialized and low-income neighborhoods/communities, instead of being uplifted, are literally and figuratively pushed out (physically and mentally) to more hazardous conditions. If one group is seen as expendable, then any group can have that same fate. For these reasons, racialized and low-income communities need to be at the forefront of any changes, actively engaging with communities' members to understand their perspective must be viewed as indispensable for everyone's collective future.

Research, exploring, accountability and indispensability (REAI) will allow for a robust evaluation of how UGI can be development in racialized and low-income without creating further disenfranchisement and assist in uplifting them. The communities have the right to live and grow in the neighborhoods/communities of their choosing.

## Chapter 6: Conclusions

The purpose of UGI is to be multifunctional as in, it should serve multiple purposes to residents and the surrounding urban environment. UGI can provide cooler city temperatures, better mental and physical health, and a healthy urban ecological environment. As the impact of climate change becomes more apparent, it'll be important to protect all lives (human and more-than-human) from the harmful impacts. UGI will not solve all the problems but may supply people with agency to change our current environments. However, in this change we must recognize that some groups are more vulnerable than others.

Pellow's Critical EJS Framework involves thinking beyond face-value and exploring the intricate intersections of issues surrounding environmental justice. Applying Pellow's Four Pillars to the practices of UGI unveils the many intersections of racial identities, income, and sex in relation to UGI implementation. I found that the oversimplification of the UGI development and implementation leads to injustices and without proper precautions, more harm than good will be done. Through deliberate and community-collective outreach to vulnerable groups, such as racialized peoples, UGI can be developed and implemented on a more equitable plane.



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