

**Develop, heal, sustain, decolonize:
Indigeneity and environmental justice**

A THESIS

Submitted to the Faculty of the University of Chicago in partial fulfillment of the requirements
for the Master of Arts degree in the Master of Arts Program in the Social Sciences

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Acknowledgements

This project would not be possible without the generous partnership offered to me by the community organization Semillas y Raíces, an Indigenous-led nonprofit which hosts a chapter of the Native American Church in Chicago’s neighborhood of North Lawndale. Their mission is committed to building community and healing trauma through Indigenous practices. I extend my gratitude to the folks at Semillas for kindly welcoming me into their space, and for sharing their knowledge with me. This project is a collaborative partnership, where the research products are as much the work of the folks at Semillas as they are mine. Coming into Semillas as a white settler in the so-called United States, I feel grateful for and humbled by the kindness and warmth that the crew members of Semillas have extended to me in allowing me to participate as a guest. The practices discussed herein are not my own, and I intend to be in continuous collaboration with Semillas in order to best honor how to describe them. As Peters and Andersen state so well in their 2013 volume *Indigenous in the City*, I “cannot begin to claim comprehensiveness in covering the diversity of Indigenous experiences” (p. 10). Rather, this project is my attempt to appreciate and celebrate the knowledge that Semillas has gifted me throughout our time together, and to contribute to the task of documenting Indigenous agricultural practices in urban settings.

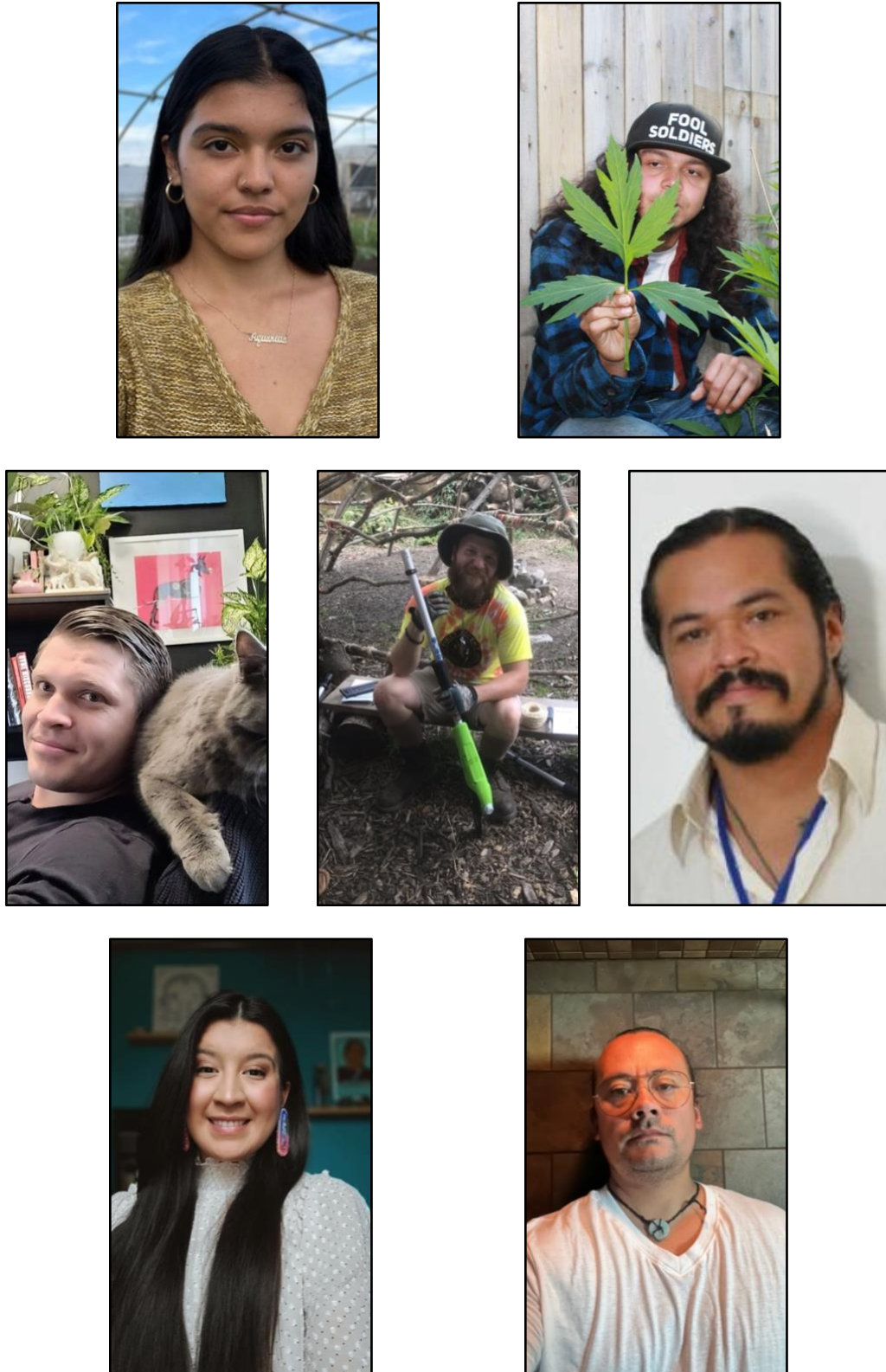


Figure 1. The crew members of Semillas y Raíces who have graciously shared their knowledge during this project. From L to R, Row 1: Sam Archiga; Xavier 'X' Colon; Row 2: Daniel Heiniger; Richard Lawson; Tomás Ramírez; Row 3: Yoli Sandoval; Steel.

Introduction: All my relations

“Do they get along?”

Yoli and Xavier (X)¹ stand in the garden, looking at the plants they plan to sow that day. This is the question that Yoli asks X when they suggest placing two different species of plants near each other in the same bed. X nods and explains why, and then the three of us start to plant the seedlings in the bed. The phrasing of Yoli’s question stands out to me as something that is remarkably generalizable to the work of Semillas as a whole. *Do they get along?* This is something that, in many ways, Semillas asks of both plants and people.

Tomás, who is a professor at DePaul University and the founder of Semillas, is renowned in Chicago and beyond for his work in restorative justice. Sitting across from Tomás at a diner in Chicago, he steers our conversation about environmental justice and the Semillas community garden to one of restorative justice. For me, the phrases *right relationship* and *restorative justice* had some familiarity, but I did not have a deep understanding of what they meant. When I ask Tomás if he could explain to me what exactly *right relationship* means, he asks me how I feel when I look in the mirror. The question catches me a bit off guard, and I laugh in confusion. As a Jewish butch lesbian whose appearance is hardly in line with American expectations for the appearance of people gendered as female, I think quite often about how I look to others. The purpose of his question becomes clear rather immediately, as I listen to Tomás explain that the first level of being in right relationship is with oneself. Do you love yourself? Are you filled with self-loathing, in the way that so many academics glorify? Are you even open to the possibility of a positive relationship with yourself – which will enable more positive relationships with other

¹ A note on pronouns: Xavier (herein referred to as X per their wishes) uses both he and they pronouns; and Sam uses both she and they pronouns. Throughout this project, X and Sam will be referred to by both sets of pronouns interchangeably.

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beings, humans and nonhumans alike? The esteemed environmental scientist and member of the Citizen Potawatomi Nation Robin Wall Kimmerer has written about her experience challenging students on their ideas of love in a graduate writing workshop that she taught, where she asked students, “Do you think that the earth loves you back?” and then, upon a resounding silence, “What do you suppose would happen *if* people believed this crazy notion that the earth loved them back?” (Wall Kimmerer 2013, 124).

Do they get along?

At Semillas, this question is asked of everyone and everything. Who are you aligned with, and why? How do you express your alignment? How do you become aligned? Are you in right relationship with yourself? With other people? With situations? With nature, and ecosystems? With technology? With connectedness as a whole? If not, how are you going to get to the point where you are? Are you doing the work? Who holds you accountable, and who do you hold accountable?

At Semillas, a restorative justice framework means being in right relationship with humans and nonhumans, and being aligned with the world around you. Although there is no centralized academic definition of what exactly restorative justice means (O’Mahoney et. al 2017, 1), scholars generally agree that it presents an alternative to the racialized criminal justice system, and that the goal of restorative justice is to hold people the legal system identifies as “offenders” accountable and promote reintegration into society rather than focus on punishment (Lanni 2020, 1). Despite the intentions of restorative justice in rethinking the logic of the criminal justice system, many academic definitions of its practice – such as the one presented here by Lanni – rely on terminology which necessitates the designation of an ‘offender.’ By using terms such as ‘offender,’ scholars with the best of intentions in studying restorative justice

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may inadvertently shift the focus of restoration from relational accountability to blame and vindication. In this sense, a truly restorative justice is a practice that focuses entirely on relationships, following the logic of Indigenous ways of knowing:

As the Lakota Sioux put it, '*Mitákuye Oyás'iy,*' we are all relatives; we are here on earth to learn to take care of one another, whether human or not. As relatives living within the continuum of creation, it is our responsibility to live in 'right relationship' and be present to one another and to the earth in ways that promote healing and flourishing for all (Davis 2019, "Ubuntu: The Indigenous ethos of restorative justice," para. 1).

The misattribution of restorative justice to academia, rather than Indigenous peoples, does not go unnoticed by Indigenous practitioners, and causes immense frustration. Further, despite a steadily increasing interest by state functionaries and criminologists in the use of restorative justice, the Indigenous communities that have practiced such methods for centuries frequently receive little to no credit for their advent (Tauri 2016, 53). Early on in our relationship, Sam, one of the crew members of Semillas, pointed out to me that many non-Indigenous scholars of restorative justice neglect to acknowledge that Indigenous peoples practice restorative justice in their everyday lives. Part of the goal of the project at hand is to contribute to scholarly literature where Indigenous voices are at the forefront of knowledge regarding restorative justice as a practice that is ultimately based in relationships.

Oglala Lakota author Luther Standing Bear explains that "Indian faith [seeks] the harmony of man with his surroundings" (Standing Bear 2006, 205). The community garden at Semillas is a space where being in right relationship with oneself, with each other, with the land, and with so much more, can come to fruition through community care, community building, and community accountability, which Tomás identifies as three major aspects of Semillas that

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contribute to decolonization. Sam aptly explains that the garden is *what* Semillas does, and that a restorative justice approach is *how* they do it. In an expression of what it means to be in right relationship, Semillas engages in a partnership with each other; the land; the technology used to work the land; the situations that arise on the land; the plants and animals on the land; and the community the land is placed within. In seeking to be in right relationship with land, plants, and animals, the crew members of Semillas reject the western modernist view on human-nature relationships which posits culture and nature as separate and inherently destructive to one another, and instead adopt one where “nature [is] not dangerous, but hospitable” (Vaisman 2013, 106; Standing Bear 2006, 205). At Semillas, as in many Indigenous spaces, crew members express this collaborative worldview through the frequent use of the phrase *all my relations*, which Saulteaux (Ojibway) and Métis archaeologist Autumn Whiteway explains is “an important phrase utilized by Indigenous peoples in North America to express their worldview about the interconnectedness of all creation; from people, to animals and insects, to plants and inanimate objects” (2023, para. 1).

This project presents Indigenous knowledge which demonstrates that the fight against environmental racism (and the many other afterlives of the Americas’ colonial histories) is a necessarily decolonial enterprise, which involves active collaboration with all of one’s relations. As Glen Coulthard (2014) author of the influential text *Red Skin, White Masks: Rejecting the Colonial Politics of Recognition*, and member of the Yellowknives Dene First Nation, explains, human relationships themselves are what give meaning to land, and decolonization necessitates the restoration of a relational approach to land, as well as to each other (p. 78). It is important to note here that I mean *decolonial* in a literal, rather than metaphorical sense, where “decolonization brings about the repatriation of Indigenous land and life” (Tuck et. al 2012, 1). A

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decolonial approach to climate change means a recognition of the inability of the current world order in combating its effects; going one step further, it necessitates a reckoning with the fact that the current world order is what has led to the scale of anthropogenic climate change in the first place.² The intensity of anthropogenic climate change has led to the popular usage of the term *Anthropocene* to designate an informal unit of geological time where humanity's effects on the Earth have been so intense, that human beings themselves are constituted as a geological force that shapes the planet (Lewis et. al 2015, 173; Baldwin et. al 2020, 4). Ample evidence has shown that Black and Indigenous people face a disproportionate amount of harm caused by climate change, including negative health impacts due to exposure to pollution and environmental hazards (Bullard 2000, 73; Ilgner 2022, 1). Given the racialized nature of anthropogenic climate change, far from being an objective term, the Anthropocene is a political concept which is “inescapably racial... It bears the geological traces of white supremacy as much as it does Indigenous dispossession, primitive accumulation, and the plantation economy” (Baldwin et. al 2020, 5). Potawatomi (Neshnabé/Anishinaabe) scholar Kyle Whyte (2019) responds to the concept of the Anthropocene by pointing out that environmental apocalypse may be new for white people in North America, but really, for Indigenous communities, it began centuries ago on the onset of colonization (Whyte et. al 2019, 321). If the world is to come to terms with the racialized nature of climate change, then it must acknowledge that the first subjects of the Anthropocene's time were, and continue to be, Indigenous and Black (Yusoff 2018, 35).

²Although there is not an agreed-upon date for the start of the Anthropocene, there is “growing recognition that the Anthropocene is a geohistorical event, the stratigraphic signature of which cannot be easily decoupled from the histories of race and racism, capitalism, and European imperialism” (Baldwin et. al 2020, 4).

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In the age of the Anthropocene, Semillas is moving toward a radically decolonial world in which the power relations that have led to devastating environmental change are rendered invalid, and where Audre Lorde’s famous assertion that “the master’s tools will never dismantle the master’s house” (Lorde et. al 2020, 41) is taken to heart in the replacement of colonial, possessive modes of relating to the earth with Indigenous understandings of human-nature relations. As stated by X in a webinar that he and Sam gave titled *Restorative Justice and Indigenous Urban Environmental Restoration* (2022), urban gardening is a method by which Indigenous folks “find a means to say no [to environmental racism], and to build a new future, and continue those relationships and those agreements that [they] have had with [their] plant relatives that [they’ve] grown and consumed for millenniums” (Arechiga et. al 2022, 11:20). Through an emphasis on the relationships that they have with plants, X masterfully positions them as a key ally in combating the racialized effects of climate change. In this instance, and in many other instances presented in this account, the folks of Semillas present the fight against environmental racism and the many other afterlives of colonialism in the Americas as an enterprise requiring the cooperation of humans and nonhumans alike.

It is particularly important to engage in collaborative research with Indigenous peoples living in urban areas, as little work has been done in this area. Rather, most research concerning Indigenous realities has focused on remote or rural areas (Peters et. al 2013), in spite of the fact that the vast majority of Indigenous peoples in the United States live in urban areas (Tuck et. al 2012, 23). In this way, the lack of representation of Indigenous peoples within research in urban studies is a symptom of the afterlife of colonialism which lives on in academic spheres, where urban Indigenous peoples “become an asterisk group, invisibilized” (Tuck et. al 2012, 23). This symptom can be challenged by actively listening to the demands of Indigenous peoples and by

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engaging in meaningful conversation with communities about what they would like from researchers, and placing their values at the forefront of academic projects. As Tomás and I discussed over a shared plate of vegan nachos, if research done within a community does not listen to and engage with the community, then it is pointless. “This,” Tomás said, “is the Indigenous way of doing research.”

Indeed, in a book recommended to me by Tomás, one of the first major points made is that “creating and maintaining respectful and mutually beneficial relationships between researchers and Indigenous communities...is of utmost importance, in part because Indigenous peoples have sometimes been mistreated and misled by academic researchers, both in the distant and recent past” (Archibald et. al 2019, p. xii). Indigenous Research Methods (IRMs), which emphasize the importance of accountability and the sharing of stories, account for the inadequacies of Western research methods, which construe the ‘researcher’ and ‘subject’ as inherently separate entities who are not necessarily accountable to one another (Archibald et. al 2019, xv). My earlier conversation with Tomás on being in right relationship with oneself exemplifies the dissolving of boundaries between ‘researcher’ and ‘subject.’ Upon asking Tomás to explain a research-related concept to me as a ‘researcher,’ he flipped the script by having me look at myself as a ‘subject.’ Anthropologists commonly call for reflexivity in research relationships with Indigenous communities (Salzman 2002, 805). However, given the comments presented here by Tomás, it seems that what is more pertinent to a meaningful relationship is self-love. By prompting me to turn inward and evaluate my relationship with myself, Tomás astutely critiques anthropology’s practice of reflexivity and affirms self-love as a better foundation for relationality in research. This argument is especially supported by James Clifford (1988), who posits that we need dialogue, rather than reflexivity, because it allows for us to

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receive input from others through relationships (p. 41). Taken one step further, a lack of self-love combined with attempts at reflexivity can lead to a narcissistic practice of critique which, rather than fostering relationships, prevents them from forming at all.

Two central tensions exist in this project. Firstly, how can environmental justice make itself compatible with restorative justice? While environmental justice scholars largely position human beings as inherently destructive to nature, restorative justice seeks to make human-nature alliances. To deny the possibility of positive relationships with the earth is to deny Indigenous sovereignty. So long as environmental justice scholars largely seek to position human beings as inherently destructive to nature, its goals will, to at least some extent, be incompatible with restorative justice, which focuses on relationality rather than blame. If we are to move towards the possibility of people creating alliances with nature in resisting climate change, it is necessary to learn from Indigenous practices on how to foster collaborative relationships with nature. The second point of tension in this project centers on to what extent human beings are in control over our environment, as opposed to other beings such as plants and animals. As has been established in this introduction, restorative justice as a practice focuses on relationships, which are constructed by humans with both other human beings and non-human entities. Restorative justice also centers the importance of narrative in constructing relationships. However, narrative is a distinctly human enterprise, which Wall Kimmerer (2013) argues is central to the ways that we as people understand the world (p. 7). Given the importance of narrative to our conceptions of the world as human beings, and the uniquely human nature of narrative, is it truly possible for us as humans to participate in egalitarian relationships with non-humans?

While I do not have the answers to these questions, I have learned throughout my time with Semillas that relationality is a key factor in thinking about both environmental and

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restorative justice. This project presents findings in five sections: First, I demonstrate the geospatial relationships between Semillas, North Lawndale, and Chicago at large. Subsequently, the project’s ethnographic findings are organized into four sections, each one based on what Tomás explained as the core values of Semillas: *Develop, Heal, Sustain, and Decolonize*. The mixed methods approach in this project, which combines ethnography, Geographic Information Science (GIS), and sociology, presents a unique opportunity by which quantitative data can be personalized by presenting it alongside the concrete experiences of the people, plants, animals, and land at Semillas. Given that all relationships take place at some point in space and time, a mixed methods approach advantageously presents various aspects of relationality between people and place: While GIS can help answer questions as to *where* people are located, as well as *when* they arrived there, ethnography can help answer questions as to *why* they are there, as well as *how* they experience their locations. By combining spatial, ethnographic, and sociological data, this project asks how geospatial patterns matter to human history based on “how the people whose lives they [touch understand] their significance” (Cronon 1991, 25). In the following section, it will be demonstrated that there is a geospatial relationship between where environmental issues and social issues take place in Chicago.

Chicagoua: Making and remaking urban space in nature

The city known today as Chicago was long referred to by Indigenous peoples as Chicagoua,³ the Illinois and Miami peoples’ word for wild garlic, which grew abundantly in the marshy wetlands that once sprawled across the now concrete metropolis. Although to colonial

³ *Chicagoua* is not the official spelling of the nameplace, and others spell it *Chicagou* or *Chigagou*. In his 1991 article on the etymology of Chicago’s name, John Swenson makes the case that the name refers to *allium tricoccum*, commonly known as wild garlic, despite popular misconceptions that the name means “wild onion” or “bad smell” (p. 235). For consistency with the way that interlocutors refer to the city, the space will be referred to as *Chicago* throughout this project.

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European eyes, the lack of a neat division between city and country made it seem as though Chicago was a pristine wilderness, Indigenous peoples have been managing the wetlands and prairies of the region since time immemorial (Cronon 1991, 26; Barnett et. al 2020, 3). Settler-colonialists used the false claim that the land was not being properly managed by Indigenous peoples as an excuse to dispossess them of the land, and to impose a racially restrictive society based on private property (Barnett et. al 2020, 15). Despite settler-colonial claims that Chicago is now a strictly urban space, in which humans dominate over nature, Chicago, like all urban spaces, is built within and alongside nature in a continuously relational process (Cronon 1991, 8).

In Chicago, the harms that ecosystems face often parallel the harms faced by marginalized communities, expressing the entanglement of human and nature. This section presents a macro-scale argument based on geospatial data, which demonstrates that there is a spatial relationship between poverty, race, and access to ecosystems in Chicago. The inseparability of social and environmental issues is referred to as environmental justice (Pellow 2018, 2). In order to contextualize the work that *Semillas y Raíces* is doing in modern-day Chicago, this section provides an overview of three environmental justice issues in the city as a whole: air pollution; green and industrial land use; and access to green space. These topics were chosen based on conversations with the members of *Semillas*. By presenting data on each of these issues, this section demonstrates that social and environmental issues are located in the same points in time and space in Chicago. Specifically, Black, Indigenous, and People of Color (BIPOC)⁴ and people living in poverty are more likely to live in areas that are affected by

⁴ The term BIPOC became popularized in the early 2010s as an alternative to POC (People of Color). By placing Black and Indigenous peoples at the forefront of this term, history professor Dr. Charmaine Nelson explains that BIPOC seeks to emphasize that “under colonialism African and Indigenous people had very different experiences,

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environmental issues, such as a lack of green space, poor air quality, and proximity to industrial activity.

In order to demonstrate the multiple factors that can shape the relationships that people have with both environmental and social issues, such as race and class, this project takes an intersectional stance on issues of environmental justice. Intersectionality is framed by Hill Collins' "paradigm shift" (2019) of intersectionality, which she describes through four core constructs:

- (1) Race, class gender, and similar systems of power are interdependent and mutually construct one another.
- (2) Intersecting power relations produce complex, interdependent social inequalities of race, class, gender, sexuality, nationality, ethnicity, ability, and age.
- (3) The social location of individuals and groups within intersecting power relations shapes their experiences within and perspectives on the social world.
- (4) Solving social problems within a given local, regional, national, or global context requires intersectional analyses (p. 48).

Building from Collins' paradigm shift, I argue that consideration of people's physical spatial locations can add nuance to understandings of their social locations. Everything that human beings do has a spatial dimension, in that human behavior always occurs in a specific location (Holmes et. al 2017, 31). In line with Marxist urban geographer David Harvey's (2009) statement that a city is "a complex dynamic system in which spatial form and social process are in continuous interaction with each other" (p. 46), this project conceptualizes the spatial location of environmental issues as physical manifestations of social injustice that can help us better understand theories of social injustice. Pellow (2018) proposes that environmental justice

[and that] to conflate everything in one is to erase, which is the very nature of genocidal practice" (Garcia 2020, para. 6). Due to this project's focus on colonialism, I have opted to use the term BIPOC.

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research should place greater emphasis on “multiscalar research,” paying attention to the way that environmental issues transcend a singular spatial and temporal location, both in a literal geographical sense and in an abstract social sense (p. 15). By focusing on environmental issues at multiple scales, not just a macro-level quantitative scale, scholars can avoid losing touch with the very real impacts that these issues have on people’s day-to-day lives.

The methodology used in this project is based on prior research showing that environmental issues are typically distributed in a way that disproportionately affects BIPOC, particularly Black, Hispanic, and Native American people; as well as people living in poverty (Grineski et. al 2017, 71; Bullard 2007, 4; Bullard 2000, 1). In this section, the types of analysis used are based on strategies used by prior researchers (Bullard 2007, 5; Ilgner 2022, 2; Pellow 2018, 15) to demonstrate that the areas where environmental issues take place are inhabited by people experiencing a greater degree of social inequity as compared to the rest of society. Using methodology used by the Environmental Protection Agency (2023) as a model, three environmental justice indicators were calculated in order to analyze differences between environmental hazards in community areas. First, a demographic index was calculated by combining the percent of households living below the poverty line with the percent of BIPOC in a given community area. These demographics were chosen based on the extensive literature demonstrating that they are more likely to be located near environmental hazards than other demographics (Ilgner 2022, 3; Bullard 2007, 4; Bullard 2000, 35).

Next, a series of environmental justice (EJ) indicators was calculated by combining the demographic index for each community area with a single environmental indicator. In total, three different environmental justice indicators were calculated: one for air pollution; one for the amount of industrial land use; and, one for lack of green land use. See Appendix A for detailed

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documentation of calculations, and Appendix B for detailed information on statistical analysis of each indicator. In addition to this series of environmental justice indicators, a map was created to show how accessible green space is in North Lawndale. In the following sections, each indicator will be discussed in detail.

As will be discussed below, the results of this analysis ultimately show that there is a spatial correlation between the placement of BIPOC; households living in poverty; and environmental justice issues. Wilson (2017) advocates for the employment of critical GIS, where “the concepts that inform or are assumed by contemporary GIS practices (including representation, collaboration and participation, standards and interoperability, data information, privacy, and so on)” are closely evaluated by the cartographer (p. 4). By employing quantitative methods that intentionally bring the experiences of Black and Indigenous peoples to the forefront of the data, this project seeks to engage in the critical GIS that Wilson describes. Critical geographers often use GIS to analyze environmental and social justice issues, using maps as a way to geographically represent the stratification of environmental issues to locations that also experience social justice issues (Wilson 2017, 10; Pellow 2018, 20). Maps are always more than they appear to be, with the “liveliness of the map just below the surface [being] at times difficult to apprehend and in other moments difficult to ignore” (Wilson 2017, 35). The goal of this project is to use ethnographic data to read the liveliness below the surface of the map back into the geographic data presented here.

Table 1*Summary of data*

Indicator	Definition	Calculation	Sources
City-wide			
Demographic index	A measure of the proportion of BIPOC living in a given community area, combined with the proportion of households living in poverty	Average two factors: 1) % BIPOC; and, 2) Households living below poverty line	U.S. Census Bureau; American Community Survey
EJ: Air pollution	A combination of the demographic index and the percentile of air pollution (measured in PM 2.5, $\mu\text{g}/\text{m}^3$) in a given community area	Percentile of PM 2.5 multiplied by the Demographic index; Results presented as percentiles	EPA; EJScreen; U.S. Census Bureau; American Community Survey
EJ: Industrial land use	A combination of the demographic index and the percentile of % industrial land use (based on the locations of industrial corridors) in a given community area	Percentile of % industrial land use multiplied by the Demographic index; Results presented as percentiles	Chicago Data Portal; U.S. Census Bureau; American Community Survey
EJ: Lack of green space	A combination of the demographic index and the percentile of % land not used for public parks in a given community area	Percentile of % land not used for public multiplied by the Demographic index; Results presented as percentiles	Chicago Data Portal; U.S. Census Bureau; American Community Survey
North Lawndale			
Access to green space	Percentage of North Lawndale that has access to either a public park or a community garden	Percentage of North Lawndale within a .25 mile buffer zone of a public park or community garden	Chicago Data Portal; CUAMP; CCG; NLGreening
Access to public parks	Percentage of North Lawndale that has access to a public park	Percentage of North Lawndale within a .25 mile buffer zone of a public park	Chicago Data Portal
Access to community gardens	Percentage of North Lawndale that has access to a community garden	Percentage of North Lawndale within a .25 mile buffer zone of a community garden	Chicago Data Portal; CUAMP; CCG; NLGreening

Demographic index

The demographic index is a measure of the proportion of BIPOC living in a given community area, combined with the proportion of households living below the poverty line. This was calculated by taking the average of two factors: the percent BIPOC; and, the percent of households living below the poverty line, as represented in the below equation:

$$\text{Demographic index} = (\% \text{ BIPOC} + \% \text{ Poverty})/2$$

The demographic index was calculated first in order to be used for the subsequently calculated environmental justice indicators of air pollution, industrial land use, and lack of green land use. Racial demographic data was sourced from the U.S. Census Bureau 2021 American Community Survey (ACS). Poverty data was sourced from the U.S. Census Bureau for the years 2008-2012, and was aggregated to Chicago community areas by the Chicago Data Portal. The purpose of the demographic index is to quantitatively express the relationship between race and poverty, adding a dimension of intersectionality to the data presented here.

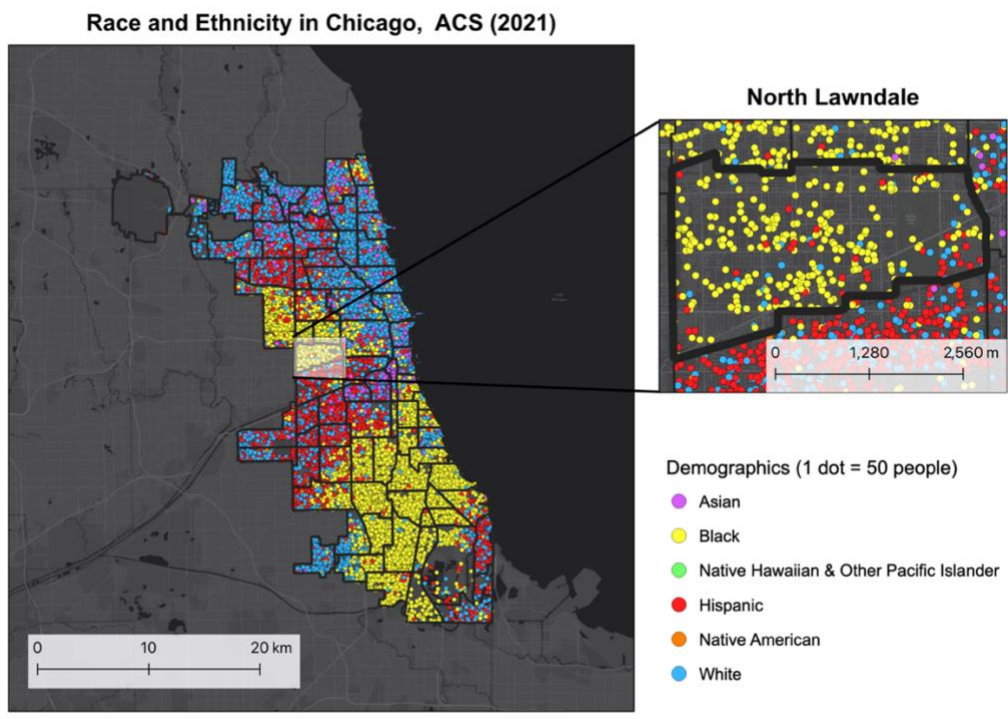


Figure 2: Race and ethnicity in Chicago, ACS (2021).

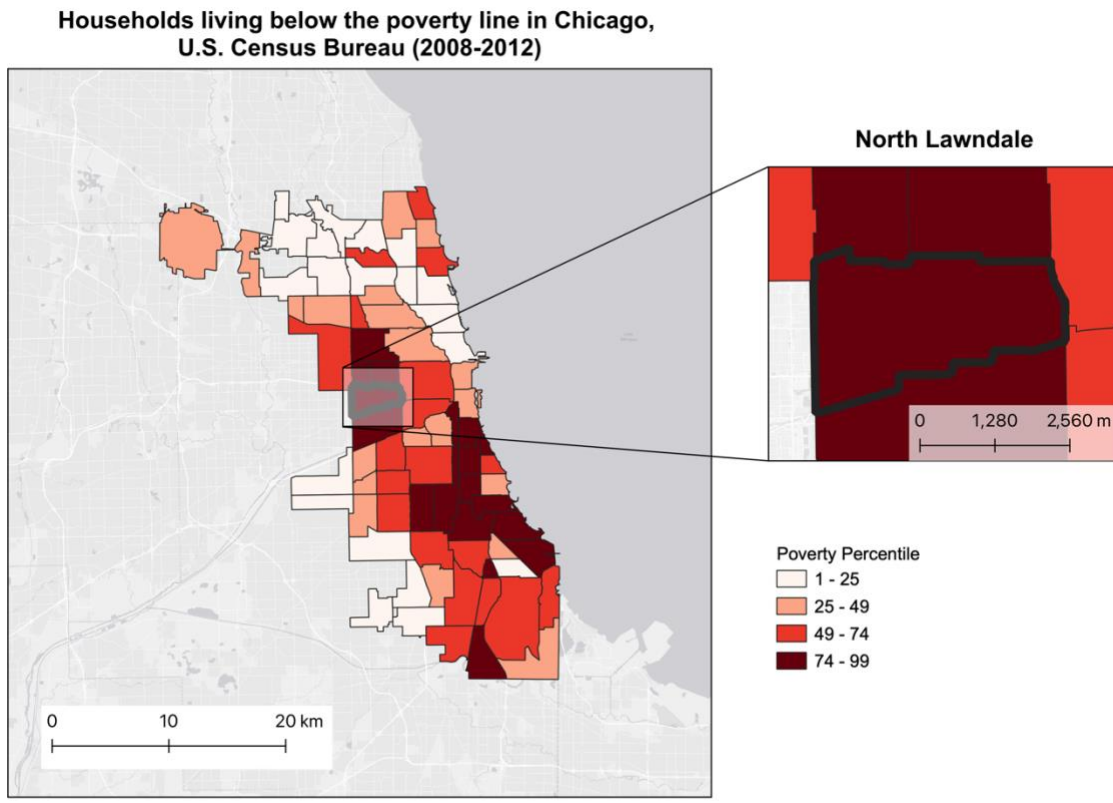


Figure 3: Households living below the poverty line in Chicago, U.S. Census Bureau (2008-2012).

Results

There were 19 community areas in the top quartile of poverty. None of the community areas in the top quartile of poverty had a percentage of white residents above the city’s median, and all of them had at least one racial/ethnic minority whose percentage of residence was above the city’s median. The top seven most impoverished community areas had a Black population of at least 78.28%, which is 527.75%⁵ above the city’s median Black population of 12.47%. 17 of the 19 areas had a percentage of Black residents above the median; six had a percentage of Native American residents above the median; four had a percentage of Asian residents above the median; and three had a percentage of Hispanic residents above the median. While the

⁵ This figure was calculated using the percent increase from 12.47% to 78.28%.

implications of these results will be discussed in further detail in the conclusions of this section, this data demonstrates that BIPOC communities are more likely to experience poverty.

Air pollution

The Chicago Health Atlas provided data sourced from the EPA regarding the Particulate Matter Concentration (PM 2.5) for particulate matter smaller than 2.5 microns in diameter, for each year in the period of 2015-2020. This size of particulate matter “is one of the most dangerous pollutants because the particles can penetrate deep into the alveoli of the lungs” (Chicago Health Atlas 2020). The Chicago Health Atlas sourced its data from EJScreen, an Environmental Justice Screening and Mapping Tool created by the EPA. In order to create a more comprehensive picture of the PMC that could be accurately compared with the Demographic Group information from 2016-2020, the data was averaged for this project for the years of available air quality data (2015-2020). The community area boundaries were sourced from the City of Chicago.

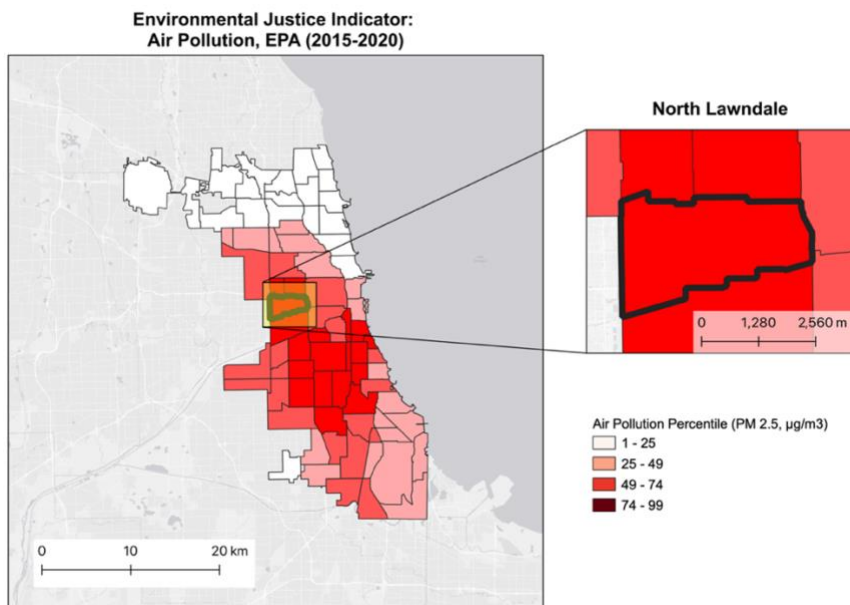


Figure 4: Environmental Justice Indicator: Air Pollution, EPA (2015-2020)

Results

There were 19 community areas in the top quartile of air pollution. None of the community areas in the top quartile of poverty had a percentage of white residents above the city's median, and all of them had at least one racial/ethnic minority whose percentage of residence was above the city's median. 14 of the 19 areas had a percentage of Black residents above the median; nine had a percentage of Native American residents above the median; six had a percentage of Asian residents above the median; six had a percentage of Hispanic residents above the median; and one had a percentage of Native Hawaiian & Other Pacific Islander above the median. This data demonstrates that BIPOC communities are more likely to be located in areas where they will experience poor air quality. The results of analysis present implications for the geospatial relationship between race and air quality, which will be discussed in depth in the conclusions of this section.

Industrial and green land use

Industrial land use was calculated based on the percent of a community area that was taken up by city-designated Industrial Corridors. These areas were zoned by the city to be used for industrial and manufacturing activity. The city justified the placement of industrial corridors in 'at-risk' communities in part by saying that doing so would support job growth (City of Chicago, 2022) despite ample evidence showing that proximity to industrial activity does not support job growth, but rather places communities at increased risk of health concerns such as asthma and cancer (Bullard 2000, 135). The city's belief that amplifying industrial commerce in impoverished BIPOC communities would support, rather than harm, their residents, points to Coulthard's (2014) critique of so-called "sustainable development" – just because a project seeks to elongate its exploitation of land, resources, and labor, it does not mean that it is more

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“sustainable” or beneficial to the community (p. 77). In the below maps, green land use was calculated based on the percent of a community area that was taken up by a public park, based on data from the Chicago Park District, which was provided by the Chicago Data Portal. Lack of green space was calculated based on the amount of a community area not used for public parks.

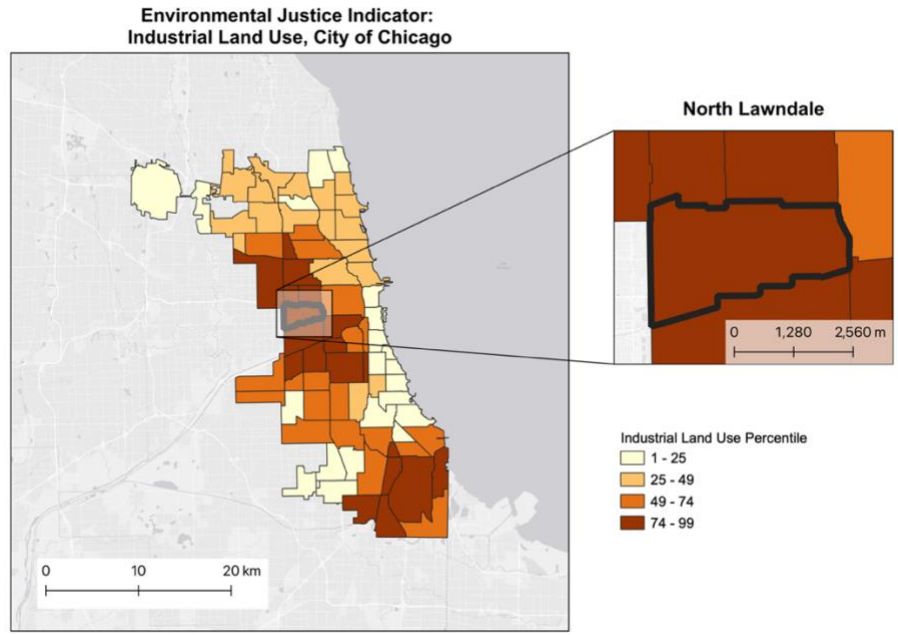


Figure 5: Environmental justice indicator: Industrial land use.

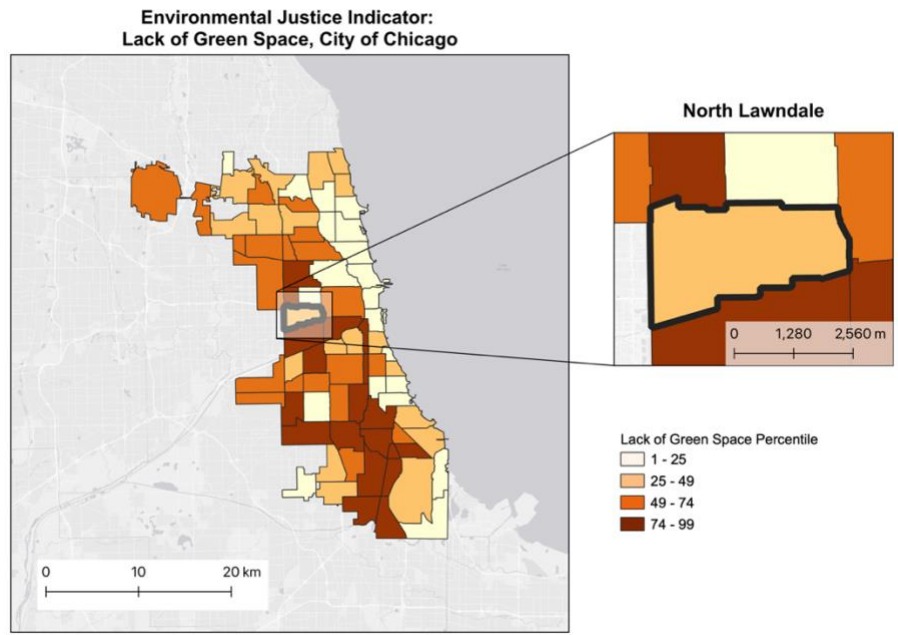


Figure 6: Environmental justice indicator: Lack of green space.

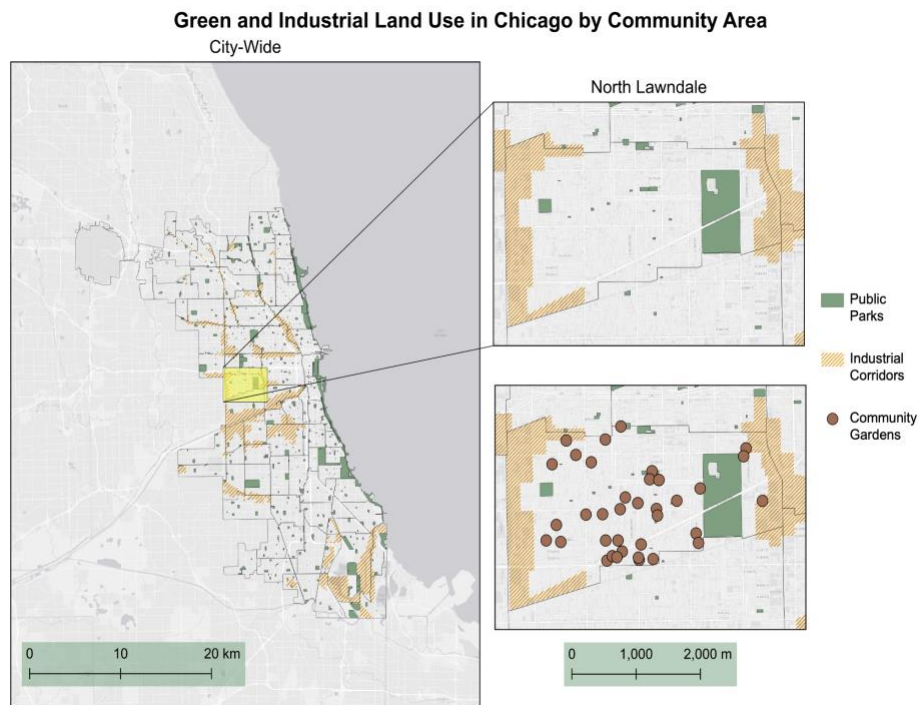


Figure 7: Green and industrial land use in Chicago by community area.

Results

There were 19 community areas in the top quartile for industrial land use. All of them had at least one racial/ethnic minority whose percentage of residence was above the city's median. 12 of the 19 areas had a percentage of Black residents above the median; eight had a percentage of Native American residents above the median; 11 had a percentage of Hispanic residents above the median; six had a percentage of Asian residents above the median; two had a percentage of white residents above the median; and one had a percentage of Native Hawaiian & Other Pacific Islander above the median. The poverty percentile for all 19 areas ranged from 27.28% to 98.70%, and the median poverty percentile was 72.73%, compared to the city-wide median of 49.35%.

There were 19 community areas in the top quartile for lack of green space. All of them had at least one racial/ethnic minority whose percentage of residence was above the city's

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median. 14 of the 19 areas had a percentage of Black residents above the median; seven had a percentage of Native American residents above the median; six had a percentage of Asian residents above the median; 11 had a percentage of Hispanic residents above the median; three had a percentage of white residents above the median; and one had a percentage of Native Hawaiian & Other Pacific Islander above the median. The poverty percentile for all 19 areas ranged from 11.69% to 98.70%, and the median poverty percentile for these 19 areas was 68.83%, compared to the city-wide median of 49.35%. The results of this section, consistent with the analysis undertaken thus far, demonstrate that BIPOC communities are more likely to be located near environmental hazards, and to have a lack of access to green space in the form of public parks. The next section undertakes a more granular analysis of access to green space within North Lawndale, where Semillas y Raíces is located.

Access to green space

This section analyzes access to green space in North Lawndale by studying the geospatial relationships between residents, public parks, and community gardens. Sources for community gardens included: The Chicago Data Portal; NLGreening; Chicago Community Gardens; and the Chicago Urban Agriculture Mapping Project. Each of these sites had a list of community gardens, and each list differed from the other. For example, some sites had different names for gardens at the same address; and some sites had different addresses for gardens of the same name. The gardens were compiled into an Excel spreadsheet with their addresses. Latitude and longitude were obtained from the addresses. After reading this data into RStudio, the data was spatially enabled by specifying the CRS: WGS84 CRS, in RStudio. Next, spatial data for the community areas in Chicago was read in. The same workflow was used to gather data for public parks, except that the CSV file of data was easily accessed through the Chicago Data Portal, and

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then spatially enabled in RStudio. In *Figure 8*, buffer analysis was used in order to measure accessibility of public parks and community gardens to the population of North Lawndale. A buffer size of .25 miles was used, because the American Journal of Preventive Medicine shows this is how far people are generally willing to walk to access a green space (Yang 2012, 11).

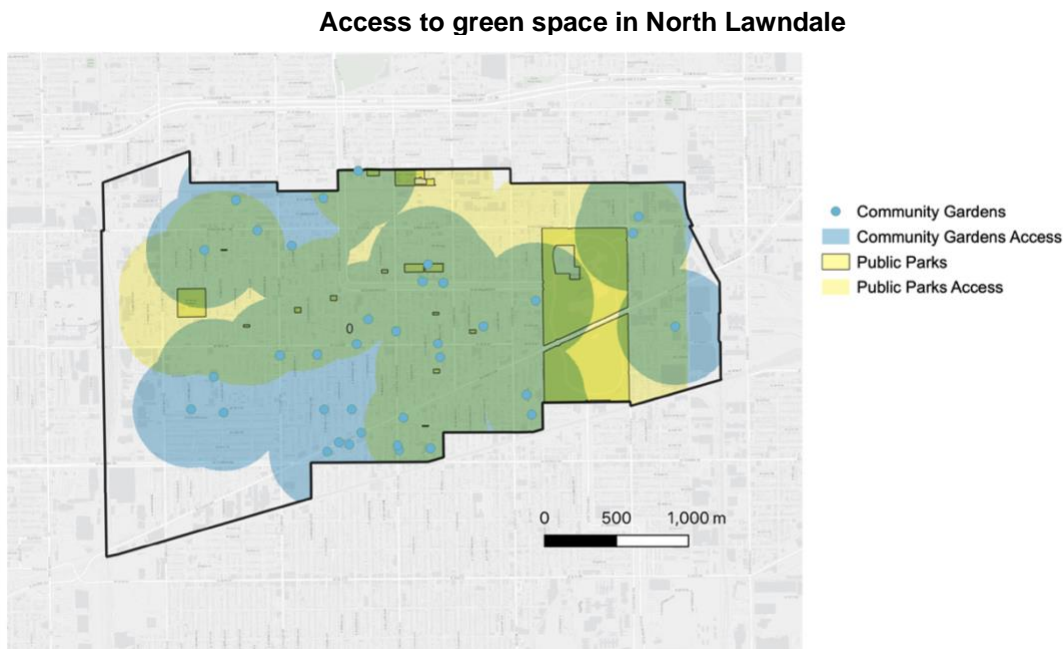


Figure 8: Access to green space in North Lawndale.

Results

Public Parks were accessible by 68.12% of the area in North Lawndale, while Community Gardens were accessible by 73.26% of the area. However, statistical analysis⁶ in QGIS showed that 29 out of 38 gardens are located in areas where residents can access public parks, meaning that 24% of community gardens are located in areas where a public park is not accessible. When overlap analysis was done at the level of census tracts, it was found that

⁶ The specific tool used in QGIS was Vector > Analysis Tools > Points in Polygon. The points used were community gardens. The polygon used was the buffer zone where public parks are accessible.

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Census Tract 8434, which also had the highest percentage of industrial land use at 52.10%, had 0% access to Public Parks, but 12.89% access to Community Gardens. All census tracts had at least some level of access to community gardens. The results of this section suggest that the community of North Lawndale uses community gardens in order to compensate for a lack of public parks throughout the neighborhood.

Conclusions

The disproportionate amount of harm exacted by climate change in racial and ethnic minorities' communities in Chicago is a modern-day iteration of the same racial hierarchy imposed by settler-colonialists in Chicagoua. The findings of this research demonstrate that there is a geospatial relationship between the location of BIPOC communities, households experiencing poverty, and environmental issues. Pellow (2018) argues that the spatial location of BIPOC populations in areas that are most highly affected by climate change is a long-term result of European colonization in the Americas and enslavement, and that environmental justice research makes insufficient use of geospatial research methods (p. 20-21). By taking a mixed methods approach where geospatial data, sociological research, and ethnographic data build upon one another, this project seeks to contribute to filling the gap that Pellow identifies using multiple ways of understanding people's relationships with each other and their environments.

North Lawndale

The community of North Lawndale faces a disproportionate amount of environmental hazards. 20.44% of land in the neighborhood is used for industrial purposes, which is 420.10% greater than the city-wide median of 3.93%.⁷ North Lawndale's population is also primarily Black and Hispanic (U.S. Census Bureau 2021). The presence of a high level of air pollution,

⁷ This figure was calculated using the percent increase from 3.93% to 20.44%.

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proximity to industrial activity, and lack of access to green space presents a systemic problem typical for most Black, Indigenous, and Hispanic communities in the United States – what Bullard terms living in “endangered space” (Bullard 2007, 4-5; Peters et. al 2013). In contrast to the high amount of industrial land use in North Lawndale, 8.91% of land is public parks. Notably, 24% of community gardens in North Lawndale are located in areas where a public park is not accessible.

Further, while all census tracts in North Lawndale have at least some level of accessibility to community gardens, not all have access to public parks.⁸ As such, it seems likely that one social function of community gardens is to compensate for a lack of green space in North Lawndale. Community gardens provide many environmental and social benefits, and have become popular in urban landscapes due to a lack of green space resulting from environmental racism (Kordon 2022, 1). For centuries, racial minorities have used community gardens as “sites of resistance and liberation,” as Carney notes in her research on dooryard gardens tended by enslaved Africans in the Plantationocene (Carney 2021, 1094). As will be demonstrated by this project’s subsequent ethnographic data, BIPOC communities continue to use community gardens as a method of resistance against social inequality. By doing a close, fine-resolution, textured study of environmental justice focused on access to ecosystems, this project demonstrates the entanglement of social and environmental issues.

Limitations

One limitation of this analysis is that the data presented is from different time periods, which could lead to unforeseen inconsistencies. The reason that data from different time periods was used is due to limitations in data availability. In the future, it is possible that more data will

⁸ Census tract 8434 has 0% access to public parks, and 12.90% access to community gardens.

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be available, and that this study could be repeated. Future research could also investigate the distribution of community gardens throughout the entire City of Chicago. This project chose to limit its investigation of community garden placement to North Lawndale, because that is the neighborhood in which Semillas is located. Further, at this point, information regarding community gardens outside of North Lawndale is limited, because the majority of my personal connections to community gardens are in North Lawndale. As such, online information regarding community gardens cannot be cross-referenced by personal sources, and it is possible that it could be out of date with no way of checking whether that is true.

Future Research

This section has served to contextualize the relationships between environmental and social issues in Chicago by providing information on *what* issues take place *where*. The social implications of the geospatial data presented here needs to be demonstrated through relational, concrete stories, which help to answer *why* certain relationships exist, and *how* they unfold. This strategy is in line with calls from Pellow (2018) to integrate spatial information into environmental justice studies, and with past research showing that environmental issues are typically located in the same areas as minority communities (Pellow 2018, 21; Ilgner 2022, 4; Bullard 2007, 5; Bullard 2000, 136). The data in this section has demonstrated that there are considerable challenges for Chicagoans seeking to live in alignment with our environments: Environmental hazards are distributed in a racist, classist pattern. The data presented here proves the unequal relationships that people have with environmental issues, and sets us up to have a more holistic understanding of how the people experiencing these relationships understand their significance (Cronon 1991, 25). The tensions presented in the introduction of this project – between restorative and environmental justice, between human and nature – can be seen on these

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maps. In order to look into these tensions further, we will now look at one point on these maps, Semillas y Raíces, where we can learn the stories of the people, plants, animals, and land that make up its community.

Develop: The Glass Garden

Peering up with a wide smile from underneath the hood of her yellow jacket, Yoli tells me that you can forget you're in the city when you're in the garden, until you hear the train go by. I tilt my head to look around at the space. The tall, bright blue fence obscures the surrounding streets from immediate view, although the bungalows typical of Chicago are still visible. In North Lawndale, one of the city's most heavily industrialized neighborhoods, it is common to see trucks drive by as they exit the highway.⁹ The conversation among the crew members and visitors quickly moves on from Yoli's comment about the train, joking and laughing amidst the sounds of birds chirping, but her observation sticks in my mind as a rather astute commentary on the boundaries – or lack thereof – between human and nature. At Semillas, it is not physically possible to separate the sensation of being in city and nature, with both sensory experiences unfolding simultaneously. Although visually, the tall fence of the garden hides the presence of freight trucks and litter, the insistent interjections of the train don't allow us to forget that we're in Chicago.

The combination of visual and auditory input creates an environment where “natural and unnatural shades almost imperceptibly into the boundary between nonhuman and human, with wilderness and the city seeming to lie at opposite poles – the one pristine and unfallen, the other corrupt and unredeemed” (Cronon 1991, 8). At Semillas, the permanently entangled sensory input of what a modernist western ontology might distinguish into ‘urban’ and ‘natural’ points to

⁹ See the geospatial analysis conducted in the above subsection for further details.

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the necessary enmeshment (Ingold 2008, 1805) of human and nature. In one inhale, the air smells of flowering strawberry plants and freshly laid soil; in the next exhale, your breath intermingles with the exhaust from a truck driving by. Occasionally, the chirping of birds and chattering of squirrels is drowned out momentarily by a car playing rap music with the windows down on a sunny day. The sounds of drills being used for the construction of a new parking garage next door mix with the clanging of shovels being used to pile compost into a wheelbarrow for planting seedlings. It is impossible to separate these sensory experiences that create the cohesive acoustic, olfactory, and visual landscape of Semillas. The embodied experience in the garden presents a messy boundary where the landscape is at once both ‘urban’ and ‘natural.’

The multisensory knowledge presented by the landscape of Semillas is not completely expressible in words. Rather, by paying attention to my own bodily senses as the research instrument, knowledge that is not best expressed verbally can be conveyed through means of communication aside from words (Elliot et. al 2016, 47). At the same time, my embodied experience is limited – having grown up in a landscape that I was taught to think of as primarily urban, in a fairly assimilated American household, I likely miss out on a lot of what may not be strictly human-centered in my surroundings, such as stimuli caused by plants and animals. Although my mother has always provided me with a strong connection to our herbal traditions as Ashkenazi and Sephardic¹⁰ Jews, our family assimilated quite strongly into American society after fleeing the Holocaust, and the lands we live on now are not our own. My family history is what Tuck & Yang (2012) might describe as “dispossessed people [being] brought onto seized Indigenous lands through other colonial projects,” thus becoming settlers as well (p. 7).

¹⁰ Ashkenazi Jews are descended from Eastern European communities, while Sephardic Jews are descended from communities in the Ottoman Empire (Cohen et. al 2021). I chose to include this information in the project, because discussing my heritage with the members of Semillas has been integral to sharing my reasons for being interested in learning about their heritage as well.

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Meanwhile, the crew members at Semillas point out things that I would not notice otherwise, particularly Yoli – for instance, how strange, and almost comical, it is to hear the train pass by when everything in front of you is lush and green. Yoli’s observation about the sound of the train passing by playfully conveys what Ingold terms the “entanglement” of human beings with our world, which we inhabit in an enmeshed space of blurred boundaries between ourselves and others, whether human or not (Ingold 2008, 1805). Yoli’s attention to the sensory experience of the garden also points to relationship between what Archibald et. al (2019) call three ways of knowing, which are traditionally separated in Western epistemologies but are understood to be intricately connected in Indigenous ways of knowing: the mental, the physical, and the spiritual (p. xvii). In this instance, Yoli’s attention to the juxtaposition of the physical stimuli created by city and nature points to her knowledge that these sensations do not have to exist separately of one another. Rather, Chicago makes it necessary for city and nature to coexist in space and time – a point that is also demonstrated by the geospatial analysis presented at the start of this project.



Figure 9. The Glass Garden (Source: Semillas y Raíces, 2017).

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The land that Semillas is on was once a vacant lot covered in glass, brick, and garbage, which the crew members of Semillas call the Glass Garden. Figure 9 is a photo taken by the members of Semillas y Raíces, showing the ground covered in shards of glass. Looking at it today, you would never know that, although occasionally you will find a piece of glass or a chunk of brick. While raking up soil in the garden, X discovers a pile of brick rubble in the ground. When I ask X what it's from, they tell me that this rubble is left over from the days of the Glass Garden. In the early days of Semillas, the crew spent countless hours clearing brick rubble and broken glass from the land. As she describes this process to me, Yoli says that the land "took on so much." By describing the land as an active entity with the ability to take on a burden, Yoli positions the land itself as a survivor of the pollution which results from environmental racism in North Lawndale, as established in the first section of this project.

Yoli's conception of the land Semillas is built on demonstrates a theory of resistance against environmental racism and the afterlives of colonialism as a multispecies, collaborative enterprise between the many relations of people, animals, plants, and land, which requires oneself to be in alignment with all such relations. In conversations with different members of Semillas, the crew has explained that many of the plants they grow are intended to extract toxins out of the ground. Beyond multispecies collaboration, then, the folks at Semillas collaborate with the land itself in the restorative process of decolonial development. The crew members of Semillas conceptualize land as "a system of reciprocal relations and obligations," rather than as a "material resource to be exploited in the capital accumulation process" (Coulthard 2014, 78). Further, land relationships are undertaken by Semillas in a way that parallels Whyte's (2018) definition of reciprocity as "the moral quality of being accountable for returning what one has been given" (p. 140). This practice points to a potential solution for the tension between

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environmental and restorative justice, which was raised in the introduction of this project: By viewing land as a partner which can be guided in the process of collective care, rather than as a thing which can be completely controlled and commodified by human beings, it is possible to face the challenges of pervasive environmental and social inequality.

The collaborative, relational human-nature approach at Semillas is evident in the way that the space of the garden is laid out, which encourages the alignment of plants and people. Within the space of the garden, there are no separate structures designated for humans and plants. Garden beds built from tree stumps sit next to benches where people relax with their children. Ceremonial structures are built next to a section of the garden intended for medicinal herbs. A brick fire pit stands across from more plants. Towards the back of the space, a memorial to the Fool Soldiers¹¹ is placed next to a barbeque used for community cookouts, along with another garden bed. The layout of the space itself expresses how integral nature is to the worldview of Semillas. In settler colonialism, land is construed as property and human relationships to land are restricted to the relationship between owner and property, to the point that “epistemological, ontological, and cosmological relationships to land are interred, indeed made pre-modern and backward. Made savage” (Tuck et. al 2012, 5). The crew members of Semillas directly oppose colonial ontologies of land relationships, instead positing land as one of the many beings included in the phrase *all my relations*. In this way, the land itself is an active collaborator – a relative – in the fight against environmental racism as an afterlife of colonialism, rather than a commodity to be developed for strictly anthropocentric purposes.

¹¹ On my first day visiting the garden, one of the visitors at Semillas explained that the story of the Fool Soldiers is important to his heritage. The Fool Soldiers were a group of young Lakota men, named Charger, Kills and Comes, Four Bear, Mad Bear, Pretty Bear, Sitting Bear, Swift Bird, One Rib, Strikes Fire, Red Dog and Charging Dog. They were called fools for traveling to free Lake Shetek white captives in the winter of 1862. The members of Semillas often wear clothing dedicated to remembering the Fool Soldiers. The core values of the Fool Soldiers are compassion, respect, responsibility, and accountability (Britain 2011; Zimny 2019).

Heal: Engagements with the more-than-human world

With proud smiles, a few different crew members said that as they built up the garden, they found evidence of possums, rabbits, and raccoons living on the land. They wondered out loud about how the animals found this small part of the city, smiling and shaking their heads. Hill Collins (2019) notes that the social world is created and changed by human beings (p. 5), but the relationships in the social world at Semillas demonstrate that this process unfolds in a manner that seeks alignment and collaboration with nonhuman species. In a separate conversation, Tomás explains with a smile that the animals returning to the land is evidence of the ongoing process of decolonization unfolding at Semillas. Tomás' view on decolonization is supported by Whyte's (2018) claim on healing in the aftermath of settler-colonialism, which "involves the continuance and renewal of moral relationships that support their capacity to live respectfully with a changing environment" (p. 145) alongside both human and non-human relatives. When explaining the process of decolonization to me over dinner, Tomás asks, *how can we talk about this if we don't have a place?* Beyond logistical concerns, the necessity of land in forming human partnerships is represented through Indigenous practices of reciprocal land relationships, whereby the land itself is posited as a participant in the community (Coulthard 2014, 77). Further, the connection that Tomás makes here between the presence of animals in an urban space, the necessity of having access to land, and the process of decolonization at Semillas, points to the necessary partnership between city and nature in resisting oppression.

As I've gotten to spend more time in the garden with the crew members of Semillas, I too have had the privilege of experiencing the possibilities that the act of gardening presents for healing. Having come into the space one day with the intention of interviewing Richard, a crew member of Semillas, I ended up spending the whole afternoon and part of the evening there with

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him, laying soil onto a garden bed together as we talked about the intimate details of our past traumatic experiences. There was something grounding about working with our hands during this conversation, gently pulling weeds from the garden bed, that enabled us to talk about such personal stories during one of our first times meeting each other. The conversation between us had started by Richard asking, “with your consent, I’d love to hear your origin story, and how you came to be,” with his hands folded gently in his lap as we sat on benches in the garden. It was both endearing and intriguing to me that Richard chose to focus on story when asking about my background. Asking about story is something I have done intentionally when engaging in conversation with the folks of Semillas, because of Tomás’s emphasis on storytelling during his explanation of restorative justice and being in right relationship. In conversation with Richard, this theme came up again, with him sharing that storytelling is a way of healing from trauma in a restorative justice lens. During the conversation with Richard, the act of tending to the garden facilitated the process of restorative justice. Tending to the land enabled us to tend to ourselves, to provide our emotions with the same level of nurturing care that we gave to the soil. This experience points to one of the tensions raised in the introduction of this project – to what extent do human beings have control over our environment? This vignette seems to present evidence in both directions. While Richard and I actively manipulated the environment by sowing plants and raking soil, the environment also clearly had its own ways of affecting us, bringing moments of comfort and light-heartedness to our heavy conversation. Perhaps the human is the backbone of the socio-environmental relationships formed in the garden.

After this experience, I reflected on the relationships that other members of Semillas have with the garden. On a temperate spring day, X, Yoli and I spent a few hours at the garden while

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X taught us how to make a *konuko*,¹² (Figure 10) which X explained is the Taíno word for *mound*. The Taíno, from whom X is descended, are the Arawakan-speaking peoples of Abya Yala,¹³ specifically, the Caribbean. In one of our first encounters, X shared an article with me from National Geographic (2019) on the myth of the extinction of the Taíno people. Puerto Rico as a political entity has attempted to make the identity of Taíno people extinct through “paper genocide,” wherein people are made to disappear on paper through intentional exclusion from government censuses and historical accounts, resulting in a lack of systemic recognition (Estevez 2019, para. 4). For X, building a *konuko* is a way to carry on Taíno agriculture in the face of systemic erasure. The Caribbean ethnobotanical scholar Cristiana Cruz Minier describes the practice of *konuko* as a process that “involves the maintenance of a high level of species diversity...which facilitates the support of a family, even in times of precarity” (Cruz Minier 2016, 235). Leaning forward, X explains that “in order to keep my culture alive, I had to keep – I have to keep, not, had, but, but *have* to keep – my agricultural traditions alive.”

¹² The word *konuko* has various spellings, including *conuco*. X and I have collaboratively chosen to use the spelling *konuko* for this project.

¹³ Abya Yala refers to the so-called ‘American’ continent. The concept emerged in the 1970s in Dulenega, or what others call ‘Panama,’ and was coined by the Kuna (Del Valle Escalante, 2014).



Figure 10. Two images of X and Sam preparing the konuko. (Source: X Colon, 2023).

A konuko is built by raking rich, fertile soil into a pyramid about one foot tall, and then gently flattening the top of the pyramid so that it is shaped as a mound. As X demonstrates how to build a konuko, they explain that the purpose of a konuko is to “help along the process” of the plants growing there. By positioning himself as a proactive caretaker, rather than an authoritative leader, in the process of the plants’ growth, X expresses a worldview which aligns himself, the plants, and the land as being in a relationship that emphasizes partnership. X facilitates the process of plant growth by positioning the soil in a way that nurtures them; and the plants in turn will provide food to X and their community. The relationship between X and the konuko speaks to the tensions between human beings and our environments that were raised in the introduction of this project. Although the konuko cannot exist with X to build it, the konuko facilitates a complex ecosystem that a human being could not have without it. This process aligns with Wall Kimmerer’s (2013) assertion that “plants know how to make food and medicine from light and

water, and then they give it away” (p. 10). The konuko suggests a relationship that is not entirely equal, but rather, is enmeshed in relations of healing care.

Sustain: Intentional community partnership

When the crew members started Semillas, it was clear to the group that having support from the community was going to be necessary to make the project happen. People brought what they could, whether that was money, wood, or donuts. Now, Semillas continues to make an active effort to reach out to the community that they’re in. From community barbeques to open mic nights, Semillas is constantly seeking ways to build relationships with new community members. In the process of building a website with Semillas, a commonly voiced request has been to ensure a lack of jargon, as well as having the site in both English and Spanish, in order to ensure that the information is accessible to as wide an audience as possible.¹⁴

The partnerships that Semillas participates in are very intentionally chosen. Restorative justice does not mean going along with what people ask of you regardless of how it affects you – it means seeking to be in alignment with the world around you. In a book recommended to me by Tomás, Stephan Beyer says that “conflict is inevitable and presents an opportunity to establish deeper connections with others” (Beyer 2016, 1). When it comes to conflict, Yoli explains to me with a laugh that Semillas “means business – this is the real deal.” In order to address conflict, Semillas holds community circles, where everyone participates in discussing the matter at hand. The practice of restorative justice is especially important in North Lawndale, which is one of the most heavily policed neighborhoods in Chicago (Grimm 2022, par. 4). The peacemaking circle is a way of living the principles of restorative justice – something that Yoli explains Indigenous people have been doing for hundreds and hundreds of years. In peacemaking circles, the way to

¹⁴ As part of the partnership between Semillas and me, I am assisting in building a website based on this ethnography.

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resolve a conflict is not to ‘win’ an argument, but rather to become aligned with one another. Yoli’s explanation of the enactment of community circles reminds me of the way that Sam describes the community garden at Semillas: Both are ways to materialize the principles of restorative justice.

At Semillas, partnership goes beyond the strictly human world. On a sunny summer evening, X and I walk around the garden as he checks in on all the plants. We stop in front of the konukos that we had built a couple weeks earlier. The weekend prior, Semillas had planted corn seed. They obtained the seed in an exchange with a community partner, the Urban Growers Collective, where X works. Kneeling down beside one of the konukos, X points out to me the small holes in its sides, explaining that birds must have been pecking at it for the corn seeds. Gently brushing the soil back over the pecked holes, X says a couple of times, “That’s why we have to plant enough for everyone.” Walking over to another konuko, X exclaims with a wide smile that the corn has germinated. Small, light green leaves peek out at us from beneath the dark soil of the konuko.

In this instance, X positions the birds as included in the word *everyone*. Rather than construing the birds as a pest that should be deterred from eating corn seeds, they are a welcome presence in the garden. The presence of birds in the garden could be termed what Perfecto et. al (2009) refer to as “associated biodiversity” or “wild biodiversity,” where animals spontaneously arrive to an agricultural site managed by humans (p. 18). Despite the abundant possibilities that Indigenous-managed agricultural sites hold for encouraging biodiversity, conservation practitioners frequently disregard agroecosystems as potential sites of biodiversity. This can be attributed to “the popular and romantic conceptualization of Nature as a Garden of Eden [where] many conservationists think of agriculture as the defining feature of biodiversity loss” (Perfecto.

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et al 2009, 18). If X had adopted this point of view, he might have tried to take measures which would discourage birds from eating the corn seed in the konukos, such as pesticides. Rather, X and the other members of Semillas view the return of birds to the land as a sign that their agricultural practices are creating spaces where multiple species, not just humans, can thrive.

In addition to partnerships with animals, Semillas facilitates partnerships with and between plants in the garden. Native plants that tend to grow near each other in unmanaged natural sites are sown together in the garden as well, exemplifying the concept of ecomimicry, described by Winter et. al (2020) as “a strategy for developing and managing cultural landscapes, built upon a deep understanding of the structure and function of ecosystems, that harnesses ecosystem processes for the purpose of balancing and sustaining key ecosystem services” (p. 190). For instance, X explains that planting wild ginger, *Asarum canadense reflexum* (Aristolochiaceae) next to paw paw trees, *Asimina triloba* (Annonaceae), helps them to grow. In the garden, wild ginger is sown in the shade of paw paw trees. The knowledge that X presents here is also expressed in the terms used by Western botanical knowledge, as demonstrated in Table 2. As can be seen, both plants tend to grow in similar ranges and habitats. Because wild ginger prefers light shade, while paw paw trees can tolerate partial sun, wild ginger does well growing in the shade provided by the trees. Both plants prefer similar moisture and soil conditions. Further, both have some shared faunal associations, including flies and beetles, which act as pollinating agents for wild ginger and feed on the nectar of paw paw trees. Such instances of ecomimicry are evidence that human beings are not inherently destructive to nature, and that it is possible – and at this stage of the Anthropocene, necessary – to move beyond a purely exploitative ontology of relating to the earth, and engage in intentional partnerships with nature (Winter et. al 2020, 190). Through their intentional relationships with the more-than-human

world, Semillas enacts the principles of restorative justice at the garden by inviting all beings into their space to participate in restoring and sustaining the land.

Table 2*

Asarum canadense and asimina triloba

Plant	Cultivation			Range and habitat		Faunal associations
	Shade	Moisture	Soil	Range	Habitat	
<i>Asarum canadense reflexum</i> (Aristolochiaceae), wild ginger	Light shade	Moist to slightly dry	Rich and loamy	Illinois	Woodlands, bluffs, ravines, slopes	Flies and beetles as pollinating agents; ants are attracted to the seeds
<i>Asimina triloba</i> (Annonaceae), paw paw trees	Light shade to partial sun	Moist to mesic	Fertile and loamy	Southern and central Illinois	Woodlands	Fauna which feeds on various parts of the plant: Flies, carrion beetles, some caterpillars and moths, raccoons, opossums, red fox, gray fox, striped skunk, gray squirrel, fox squirrel, woodland box turtle, some birds

*Sources: Hilty (2022a). Hilty (2022b)

Decolonize: Centering the racialized history of climate change

While sitting in the office space of Semillas eating birthday cake and talking about Star Wars, Tomás asks the crew a question for a grant proposal: *How does Semillas contribute to decolonization?* Sitting on the floor playing with his and Sam’s baby, who is just starting to walk, X responds that getting involved with youth and passing practices down to them is a way of engaging in self-determination. Notably, X uses the words *decolonization* and *self-determination* interchangeably. X’s response is proof of what Coulthard (2014) writes: “the

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colonized must initiate the process of decolonization by first recognizing themselves as free, dignified, and distinct contributors to humanity” (p. 43). The importance of self-determination, decolonization, and a relationship with plants and the land for Semillas points to the multi-relational nature of decolonization.

For Semillas, and for many Indigenous folks (Lewis 2021, 108), having access to land on which they can grow food and medicine in a way that is beneficial for the whole ecosystem, including humans, animals, plants, and the land, is integral to livelihood. In various conversations with crew members of Semillas, having the consistent ability to grow food and medicine as a community without relying on the state was identified as a method of decolonization. Anthropologist and enrolled citizen of the Cherokee Nation Dr. Courtney Lewis has pointed out that, despite the many Indigenous scholars who voice how important it is to discuss in the wake of food scarcity during the global pandemic, anthropology as a field is largely lacking in research on US Indigenous food sovereignty that highlights the voices of Indigenous people (Lewis 2021, 107). For Semillas, in addition to food security, a primary driver motivating them to obtain their own space was having somewhere to do ceremony. Prior to having the lot that Semillas is on, the group had to travel about two hours to a location where they could hold it. Sometimes, their lodge was demolished. Now, having the space that the garden is in, the group has more ownership and privacy.

At Semillas, decolonization is certainly unfolding in the ways that crew members recognize the value of the ways that they relate to the earth, which build resiliency. What is perhaps most blatantly missing from the western modernist view on human-nature relationships is an appreciation for relationships between human beings and nature that are respectful and fruitful – or, more accurately, even a realization that such relationships are possible. Thanks to

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the voices of Indigenous peoples, more and more scholars are calling for a greater understanding of “the ways in which people and plants come to know, care for, and perhaps love one another in multispecies communities” (Miller 2019, 1). This growing body of literature on multispecies ethnobotany challenges western assumptions of a strict separation between humans and nonhumans (Miller 2019, 5). It is necessary for scholars to center the voices of Indigenous peoples in discussions on climate change, as these issues are inseparable from human-nature ontologies. In thinking critically about the racialized effects of climate change, “any critical theory that does not work with and alongside black and indigenous studies (rather than in an extractive or supplementary mode) will fail to deliver any epochal shift at all” (Yusoff 2018, 19).

A major aim of this project has been to join the growing body of scholars who are “reading histories of European imperialism, racial capitalism, and white supremacy back into the Anthropocene concept” (Baldwin et. al 2020, 4) by focusing on the connection between colonialism and climate change, a relationship that interlocutors from Semillas have all emphasized throughout my time with them. Focusing on ontologies of human-nature relationships that conceive of the two as inextricably aligned, rather than mutually destructive, is one way of showing that modernist western ontologies are not the only possible way by which to construct a relationship with the earth. The narratives presented here by the members of Semillas demonstrate a worldview that construes humans and nonhumans alike as relatives in resisting environmental racism and the aftermath of colonialism. Semillas advocates for a human-nature relationship where human beings are aligned with human and non-human relatives, including plants, animals, and land. X expresses this in describing the act of gardening as “regeneration work...[that is] healing not only for the youth in our community and the farm workers like myself, but also the land” (Gordon 2023, para. 9). The reciprocal relationship that X and the

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other members of Semillas have with nature, and with the land itself, points to what Pellow calls the first pillar of Critical Environmental Justice studies, which “involves the recognition that social inequality and oppression in all forms intersect, and that actors in the more-than-human world are subjects of oppression and frequently agents of social change” (Pellow 2018, 19). At Semillas, the crew members actively recognize plants, animals, and land as agents of social change, and intentionally partner with them in the fight against environmental racism.

Despite the breadth of research that has been done on Indigenous acts of ecosystem engineering, many scholars and practitioners are unwilling to credit Indigenous peoples for their knowledge (Turner et. al 2021, 892). The intentional exclusion of Indigenous peoples from scholarship on environmental studies only serves to accelerate the negative effects of climate change that we are experiencing today. In the age of the Anthropocene, it is more important now than ever to turn to ontologies of human-nature relationships that focus on seeking alignment with one another through healing and restoration, rather than destruction and exploitation. In 1877, Crazy Horse, an Oglala Lakota warrior who earned a reputation for his dedication to the preservation of his culture, predicted that there would come a time seven generations in the future when white people would need to turn to Indigenous peoples for knowledge regarding the stewardship of the earth. An excerpt from the following quote (California Indian Education n.d., para. 3) opened a documentary made on the Standing Rock Indigenous Uprising of 2016, led by the International Indigenous Youth Council, who are a partner organization of Semillas y Raíces:

Upon suffering beyond suffering: The Red Nation shall rise again, and it shall be a blessing for a sick world; a world filled with broken promises, selfishness and separations; a world longing for light again. I see a time of Seven Generations when all the colors of mankind will gather under the Sacred Tree of Life, and the whole Earth will

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become one circle again. In that day, there will be those among the Lakota who will carry knowledge and understanding of unity among all living things, and the young white ones will come to those of my people and ask for this wisdom. I salute the light within your eyes where the whole Universe dwells. For when you are at that center within you and I am that place within me, we shall be one.

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Appendix A

EJ indicators calculations

This appendix provides detailed information on how the three EJ indicators were calculated. This methodology is based on that used by the EPA in its 2022 EJScreen Technical Documentation.

Demographic index

1. Calculate the percent of each race in each census tract.
2. Aggregate census tract data to community areas.
3. Add percent Black, Native American, Asian, Native Hawaiian & Other Pacific Islander Hispanic for each community area to get the total percent BIPOC in the area.
4. Add results of step three to percent households below poverty line for each community area.
5. Divide results of step four by three: Yields the demographic index for each community area.

EJ indicators

Air Quality

1. Rank PM 2.5 for each community area in percentiles.
2. For each community area: Multiply percentile by the demographic index.

Industrial Land Use

1. Calculate the percent of each community area in Chicago that is taken up by industrial corridors.
2. Rank the percent of industrial land use for each community area in percentiles.
3. For each community area: Multiply percentile by the demographic index.

Green Land Use

1. Calculate the percent of each community area in Chicago that is taken up by public parks.
2. Subtract the percent of land taken up by public parks from 100, to calculate the percent of land that is not public parks: Yields the amount of non-green space.
3. Rank the percent of non-green space for each community area in percentiles.
4. For each community area: Multiply percentile by the demographic index.

Appendix B

EJ indicators statistics

Table B1*Demographic data*

Community Area	Poverty Percentile	Racial/ethnic group(s) above median
Riverdale	98.70%	Black
Fuller Park	97.40%	Black
Englewood	96.10%	Black
North Lawndale	94.81%	Black
East Garfield Park	93.51%	Black
Washington Park	92.21%	Black
West Garfield Park	90.91%	Black
Armour Square	89.61%	Asian
Oakland	88.31%	Black; Native American
West Englewood	87.01%	Black; Native American
Humboldt Park	85.71%	Black; Hispanic; Native American
Burnside	84.42%	Black
South Shore	83.12%	Black
South Lawndale	81.82%	Hispanic; Native American
Woodlawn	80.52%	Asian; Black
South Chicago	79.22%	Black; Hispanic; Native American
Greater Grand Crossing	77.92%	Black
Douglas	76.62%	Asian; Black; Native American
Grand Boulevard	75.32%	Asian; Black

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Table B2*EJ indicator, air pollution: Top percentile of community areas, most to least polluted*

Community Area	Poverty Percentile	Racial/ethnic group(s) above median
Fuller Park	97.40%	Black
North Lawndale	94.81%	Black
West Englewood	87.01%	Black; Native American
Englewood	96.10%	Black
Armour Square	89.61%	Asian
West Garfield Park	90.91%	Black
Chicago Lawn	70.13%	Black; Hispanic; Native American
Auburn Gresham	67.53%	Black
Brighton Park	62.34%	Asian; Native Hawaiian & Other Pacific Islander; Hispanic; Native American
East Garfield Park	93.51%	Black
Washington Park	92.21%	Black
New City	72.73%	Asian; Black; Hispanic; Native American
Grand Boulevard	75.32%	Asian; Black
Oakland	88.31%	Black; Native American
Douglas	76.62%	Asian; Black; Native American
Gage Park	59.74%	Hispanic; Native American
South Lawndale	81.82%	Hispanic; Native American
McKinley Park	46.75%	Asian; Hispanic; Native American
Greater Grand Crossing	77.92%	Black

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Table B3*EJ indicator, Industrial land use: Top percentile of community areas, most to least industrialized*

Community Area	Poverty percentile	Racial/ethnic group(s) above median	Industrial land use percentile
Riverdale	98.70%	Black	98.70%
Burnside	84.42%	Black	97.40%
North Lawndale	94.81%	Black	96.10%
West Garfield Park	90.91%	Black	94.81%
Fuller Park	97.40%	Black	93.51%
South Deering	74.03%	Black; Hispanic	92.21%
Pullman	57.14%	Black	90.91%
East Garfield Park	93.51%	Black	89.61%
Austin	71.43%	Black; Hispanic	88.31%
Humboldt Park	85.71%	Black; Hispanic; Native American	87.01%
New City	72.73%	Asian; Black; Hispanic; Native American	85.71%
South Lawndale	81.82%	Hispanic; Native American	84.42%
West Pullman	66.23%	Black	83.12%
Lower West Side	64.94%	Asian; Hispanic; Native American; White	81.82%
Brighton Park	62.34%	Asian; Native Hawaiian & Other Pacific Islander; Hispanic; Native American	80.52%
Archer Heights	27.28%	Asian; Hispanic; White	79.22%
McKinley Park	46.75%	Asian; Hispanic; Native American	77.92%
Hermosa	54.55%	Asian; Hispanic; Native American	76.62%
East Side	50.65%	Hispanic; Native American; White	75.32%

Table B4

EJ indicator, Lack of green space: Top percentile of community areas, least to most green space

Community Area	Poverty percentile	Racial/ethnic group(s) above median	Lack of green space percentile
Riverdale	98.70%	Black	98.70%
West Garfield Park	90.91%	Black	97.40%
Armour Square	89.61%	Asian	96.10%
Greater Grand Crossing	77.92%	Black	94.81%
Humboldt Park	85.71%	Black; Hispanic; Native American	93.51%
Englewood	96.10%	Black	92.21%
Burnside	84.42%	Black	90.91%
Fuller Park	97.40%	Black	89.61%
Calumet Heights		Black	88.31%
Brighton Park	62.34%	Asian; Native Hawaiian & Other Pacific Islander; Hispanic; Native American	87.01%
South Lawndale	81.82%	Hispanic; Native American	85.71%
Chatham	68.83%	Black	84.42%
Auburn Gresham	67.53%	Black	83.12%
Roseland	53.25%	Black	81.82%
Pullman	44.16%	Black	80.52%
Ashburn	11.69%	Black; Hispanic; Native American	79.22%
Lower West Side	64.94%	Asian; Hispanic; Native American; White	77.92%
West Pullman	66.23%	Black	76.62%
West Lawn	31.17%	Native Hawaiian & Other Pacific Islander; Hispanic; Native American; White	75.32%