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Cultivating Sustainable Cities: A Comparative Study of Urban Agriculture in Mumbai, India and New York City, USA

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**Cultivating Sustainable Cities: A Comparative Study of Urban Agriculture Movements in
Mumbai, Maharashtra, India and New York City, New York, USA**

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Abstract

Urban agriculture has the potential to be a source of great social and environmental good within a city. This study couples in-depth interviews with urban farmers with secondary research to provide a holistic understanding of the urban agriculture movement in Mumbai, Maharashtra, India and New York City, New York, USA. Through this resource, it became apparent that the two movements vary drastically in terms of size, scope, resource availability, and movement goals. Despite these differences, the research points to one striking similarity. In both cities, farms and gardens in lower income areas have access to a far smaller body of resources than their counterparts in wealthier areas. Additionally, both movements struggle to form networks across socioeconomic divides. This study utilizes four social movement theories to determine why two movements that vary so drastically show such similar patterns when it comes to resource distribution and network formation. Resource mobilization theory, political opportunity structure, ideologically structured action, and new social movement theory will be utilized in order to solve this puzzle. The end result is an in-depth understanding of these two complex movements. This study may serve to inform future action surrounding urban agriculture in the two cities as well as to provide suggestions for budding movements in urban areas across the globe.

Table of Contents

Section	Page Number
Abstract	I
Table of Contents	II
Acknowledgements	III
Introduction	
To Urban Agriculture in Mumbai and New York City and Description of Methodology	1
History of Urban Agriculture in Two Cities	
Major Developments in Mumbai and New York City's Urban Agriculture Movements from 1800-Present	21
Urban Agriculture Today	
Overview of Resources, Goals, and Challenges	35
Analysis	
Using Social Movement Theory to Explain Resource Distribution Challenges Within Urban Gardens	71

Conclusions	
Proposed Action Surrounding Urban Agriculture Movements and Suggestions for Further Research	99
Bibliography	106

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Introduction

To Urban Agriculture in Mumbai and New York City and Description of Methodology

Somewhere between the Kandivali and Borivali stops on Mumbai's Western Rail Line, a family makes their living farming land adjacent to the train tracks. In Brooklyn, second graders at PS 29 learn about pollination, food miles, and botany by watching over their very own garden. Throughout Mumbai and New York City, people of all racial, socioeconomic, and generational backgrounds are practicing urban agriculture. Although the concept of urban agriculture seems to be a novel one, it has actually been an integral part of both cities' histories. Although agriculture in Mumbai has historically been fairly informal, gardens on terraces, kitchen windows, and in backyards have been a part of urban living since the emergence of Indian cities.¹ As early as 1895, New York City witnessed its first urban agriculture campaign when Bolton Hall and the New York City Association for Improving Conditions for the Poor promoted the cultivation of vacant lots throughout the city.²

The benefits of urban agriculture are well documented and have been the subject of several recent scientific studies. Generally, these benefits are divided into two categories—environmental benefits and anthropocentric benefits. Urban agriculture can improve environmental quality by reducing of food miles, decreasing the need for packaging, providing a “carbon sink” for urban pollution, and reusing food waste through composting. The social benefits of urban agriculture include increased access to green spaces, the promotion of food security, community development, and the spread of nutritional awareness. Organizations that

¹R.J. Ganapathy “Development of Urban Agriculture in India: Public Policy Options” *Indian Institute of Management Working Paper Series* 1, no. 1 (1983): 3.

² Laura Lawson, *City bountiful: A Century of Community Gardening in America* (Los Angeles, California, University of California Press, 2005): 26

promote urban agriculture use one or several of these benefits to show how urban agriculture can improve the urban environment.

It is important to explore the potential for urban agriculture in these areas because both Mumbai and New York City suffer from deteriorating environmental quality, immense food insecurity, and other social issues that urban agriculture can combat. Half of Mumbai's 11 million people live in slums without adequate access to food. In New York City, one out of every six families goes without enough food and one in four children are considered food-insecure. In addition, vast amounts of organic waste are generated every year in these urban municipalities. Mumbai generates approximately 7,025 metric tons of waste per day, 5,025 tones of which is biodegradable or recyclable.³ New York City generates 8,333 tons of waste per day, 1,500 tons of which is compostable.⁴ Urban agriculture has the potential to address these problems by recycling waste and providing residents with healthy food.

The urban agriculture movements in Mumbai and New York City look very different. Urban farming in Mumbai is mainly made up of independent farmers focused on self-sufficiency and has a very small non-profit community that runs a few community gardens throughout the city. These farms and gardens have little to no association with the city, state, or federal government. Urban agriculture in New York City is incredibly extensive and highly formalized. There are over 700 urban farms and gardens in New York City.⁵ Many of these farms or gardens

³"Functional Elements of SWM System in Mumbai", *Municipal Corporation of Greater Mumbai*, 2015, <http://www.mcgm.gov.in/>.

⁴ "Neighborhood based Drop-off Sites", *New York City Municipal Government*, 2015, http://www.nyc.gov/html/nycwasteless/html/resources/prod_serv_composting_foodwastedropoffs.shtml.

⁵ Nevin Cohen, Kristin Reynolds, and Rupal Sanghvi. *Five Borough Farm: Seeding the Future of Urban Agriculture in New York City*, ed. Jerome Chou. (USA: USA Print Craft, 2012).

are associated with established non-profits, land trusts, or government organizations.

Governmental support for urban farming goes as far as well-established federal policy.

If the vast differences between the two movements seem unsurprising, the variety within the two movements may prove more interesting. There are a wide variety of reasons for starting an urban farm or garden. Historically, urban agriculture has been used to promote urban rejuvenation, to employ the poor during depression eras, to protect green spaces throughout the city, and much more. Some farms are focused on producing the maximum amount of food in order to address food security or to promote sustainable food systems. Others are focused on education or community development. Still others have more specialized goals such as youth employment, rehabilitation from mental illness, or the promotion of intergenerational relationships. Each group of urban gardeners and farmers has its own set of goals and faces a unique set of challenges.

Every urban farm and garden, however, needs vast amounts of resources in order to succeed. All forms of urban agriculture require land, soil, water, seeds, labor, tools, and knowledge in order to keep the garden up and running. The extent to which a farm or garden can gain access to these resources is directly linked to the success of the space. This phenomenon sets the urban agriculture movement apart from most other social movements, but it also is practically the only thing that holds the movement together. Because each organization has such vastly different goals, the fact that all organizations require similar resources is often the only thing that all urban agriculture organizations have in common.

Urban agriculture looks very different in Mumbai and New York City, but both movements face challenges acquiring and mobilizing the resources necessary for all gardens to succeed. These challenges lead to a great deal of instability within each movement. Gardens

often only last a few years, which cuts back on their productivity. Without the resources necessary to succeed, gardens in both locales face extraordinary challenges. Oftentimes, urban gardeners and farmers will work together across a city to distribute resources such as compost, knowledge, or seeds. But these resources are finite, and, inevitably, some gardens will be left without.

Despite the vast differences in the two urban agriculture movements, there is one notable similarity in resource access. To some extent, each movement is divided into two groups, one of lesser socio-economic status and one of greater wealth. These distinct types of urban agriculture create their own networks and often have a difficult time communicating with one another. In Mumbai, railway farmers almost exclusively qualify as Below Poverty Line (BPL), while community gardeners are usually upper-middle class. In New York City, commercial farms and educational and community gardens in wealthier neighborhoods often work together, whereas community, school, and housing project gardens in poorer neighborhoods tend to form their own networks.

Perhaps unsurprisingly, what “network” a garden or farm falls under corresponds with their ability to access resources. For example, farmers along the railroad tracks in Mumbai often have to resort to using wastewater due to the lack of an adequate water source, while urban farmers in other parts of the city have ready access to water. In New York, there are a number of governmental policies and non-profit efforts to distribute the resources necessary for urban agriculture evenly across the city, but the inability for lower-income gardens to access these resources is still cited as one of the movement’s main concerns.⁶

⁶Nevin Cohen, Kristin Reynolds, and Rupal Sanghvi. *Five Borough Farm: Seeding the Future of Urban Agriculture in New York City*, ed. Jerome Chou. (USA: USA Print Craft, 2012), 81.

We should keep in mind that there are exceptions to these trends—there are organizations in both locales that work with both wealthy and impoverished gardens, and there are gardens in poorer neighborhoods that have ready access to resources. In both cities, there are governmental policies that promote the distribution of resources to gardens in at-risk communities. Even so, it is telling that such organizations and policies that concentrate on bridging the gaps in urban agriculture movements need exist in the first place.

It is fascinating that these two vastly different movements follow such similar trajectories when it comes to resource allocation and network formation. Could it be that these sorts of issues are inherent to urban agriculture movements? If so, what is it about urban agriculture that causes these inequalities? This study seeks to answer these questions through the deep analytical study of each movement and through comparative insights based on social movement theory.

Resource Design and Methodology

Throughout the study, I utilize a combination of interviews and secondary sources in order to get a thorough understanding of each city's urban agriculture movement. A large portion of the research consisted of a series of interviews with urban farmers and individuals involved in support organizations. In Total, 17 people were interviewed, 11 in Mumbai and 6 in New York City. This group included movement leaders, community garden participants, non-profit employees, and parents and teachers involved in school gardens.

These interviews followed a specific format that was meant to ensure a deep understanding of how each interviewee viewed the goals, successes, and challenges at play in the urban agriculture movement. Each interviewee was first asked to describe what he or she saw as the main goals of his or her garden or support organization. There are many different reasons to start an urban garden or to devote one's time and energy to urban agriculture. To assume that all

gardens and support organizations have the same goals would have been an insult to the participants and a hindrance to the study. Next, participants were asked how they determined the success of an urban garden. Again, this gives the interviewee ownership over how his or her organization or garden is analyzed. Participants were then asked to speak about challenges they faced in the promotion of urban agriculture. The result of these interviews was a clear picture of the goals of each urban agriculture organization, the degree to which these organizations have met their goals, and the factors that prevent their goals from being recognized.

Both urban agriculture movements contain several different types of farms and gardens that strive for different goals and face a variety of challenges. Because of this, a typology was developed that characterized all of the different types of urban farms and garden in each locale. These typologies were utilized to ensure that all types of urban farms and gardens were included in the study. When possible, site visits, interviews, and secondary research was conducted for each type of urban agriculture identified.

Mumbai's urban agriculture movement is relatively small, but there are still three distinct types of urban agriculture that occur in the city. Mumbai's community gardens are run by nonprofits and are taken care of by a group of local residents. The produce generated in these spaces is split between the members of the garden or donated to local churches or hospitals. The second type of urban agriculture that takes place in Mumbai occurs along the railway tracks. The Mumbai Municipal Railway (MMR) leases plots of land to families to farm. These families farm the plot for subsistence and sell the excess produce in Mumbai's vegetable markets. The third type of urban agriculture that occurs in Mumbai is the terrace garden. These informal gardens occur on the rooftops and terraces of individuals' private homes. Several community gardens and nonprofits work to promote these spaces. Both community gardens and terrace gardens were

visited for this study, but I was not able to visit railway farms. This gap is due to language barriers and time constraints. In lieu of primary research, I spoke with a staff member from the urban agriculture non-profit Fresh and Local who had done extensive research with railway farmers.⁷

The urban agriculture movement in New York City is highly documented and includes many more gardens and support organizations than Mumbai's movement. Four categories of urban agriculture were identified and included in this study: community gardens, school gardens, non-profit urban farms, and commercial gardens. Members from two community gardens, two school gardens, and two non-profit urban farms were interviewed, while information about commercial farms was gathered through their extensive body of online and print resources. A brief description of each type of urban agriculture in New York City is given below.

Community gardens are growing spaces run exclusively by volunteers from surrounding neighborhoods. These gardens are usually on former vacant lots that have been transferred over to the Parks and Recreation Department or Land Trust organizations. As of 2011, there were 390 community gardens in New York City. The majority of these gardens are well under an acre—in all, these gardens cover less than 100 acres of land.⁸

Non-profit urban farms are spaces run by land conservancies or parks associations that are charged with serving the city as a whole. These spaces are usually situated within an existing public park and therefore work closely with the Department of Parks and Recreation. Examples of these types of farms are the Battery Urban Farm, the Randall's Island Urban Farm, and the Governors Island Teaching Farm.

⁷ Nanda Kumar (Independent Railway Farm Researcher) in discussion with the author, April 2014.

⁸ Nevin Cohen, Kristin Reynolds, and Rupal Sanghvi. *Five Borough Farm: Seeding the Future of Urban Agriculture in New York City*, ed. Jerome Chou. (USA: USA Print Craft, 2012), 13

School gardens are gardens associated with a single school. Although nonprofit urban farms can have educational goals and may work directly with a number of different schools, these gardens do not fall under this category because they are not located on school property. School gardens often serve as a living classroom or a community greenspace for the school community. As of September 2014, there were 435 registered school gardens in New York City.⁹

Commercial farms are businesses that focus on maximizing profit. Often, these farms have other objectives such as sustainability or community development, but these goals are secondary. There are three commercial farm organizations that operate seven farms throughout New York City.

Overview of Organizations Included

Much of the information presented in this paper comes from interviews with urban agriculture organizations throughout both cities. Additionally, many conclusions stated in this paper hinge on the interviews. This section provides a brief overview of each farm, garden, and support organization visited in order to give the reader a better understanding of the conclusions drawn throughout the following chapters.

Urban Leaves:

Urban Leaves is an organization that runs three community gardens in Mumbai and holds workshops on urban agricultural practices. Urban Leaves began when Preeti Patil, a catering officer at the Mumbai Port Trust, began a garden on the Mumbai Port Terrace in 2001. The garden was founded on Professor Sripad A Dabholkar's "Natueco" farming methods, which combine natural farming practices with an ecological understanding of agriculture. With the guidance of Dr. R. T. Doshi, the MBT terrace farm also experimented with a unique soil building

⁹ Ellen Winston (Staff at Grow to Learn NYC) in discussion with the author, September 2014.

technique called Amrut Mitti, which uses materials found in the city to make nutrient-rich compost.

In 2009, Preeti Patil decided it was time to expand her work. She began a community garden in Maharashtra Nature Park in Bandra, Mumbai, and formed Urban Leaves, a non-profit focused on urban agriculture promotion throughout Mumbai City. Now, Urban Leaves also runs a community garden on the terrace Don Bosco School in Matunga and holds workshops on Amrut Mitti and gardening basics. Urban Leaves is entirely volunteer-driven and the gardens are maintained during community workdays each Sunday.

During my time in Mumbai, I worked closely with Urban Leaves to achieve an understanding of urban agriculture throughout the city. I held a series of interviews with Preeti Patil, the founder of the organization. In addition, I attended four workdays at their community gardens. Through these experiences, I learned about the role of waste management, food safety, and community development on Mumbai's urban gardens.¹⁰

Green Souls:

Green Souls, founded in 2012, is another organization that promotes urban agriculture in Mumbai. The Green Souls team is based out of Kharghar, New Mumbai, where the organization runs a farm behind St. Judes Children's Hospital. Green Souls' farming practices are based on the concept of Masanobu Fukuoka's concept of natural farming. This concept calls for minimal weeding and tillage as well as the complete rejection of fertilizers and pesticides. The organization also hosts a series of workshops in partnerships with schools, housing associations, community organizations, and corporate offices. These workshops focus on urban and natural farming techniques as well as an overall understanding of the urban food system.

¹⁰Preeti Patil (Founder of Urban Leaves) in discussion with the author, April 2014.

I got a solid understanding of Green Souls' goals, challenges, and reach during a site visit to their urban farm. There, I participated in a workday and held interviews with the organization's founder, Julius Rego, and another leader in the organization, Sabita Rajendron. Rajendron and Rego passed on a wealth of information about waste re-use, agricultural education, and community development on Mumbai's urban farms.¹¹

Fresh and Local:

Fresh and Local began in 2012 when Adrienne Thadani raised the funds to start the Flyover Farm on the terrace of the Mohamadi Manzil building in south Mumbai. The farm is around 5,000 square feet and is cultivated by the building's residents. Since then, Fresh and Local has acted as a resource for other budding urban farmers. Fresh and Local holds workshops that demonstrate different urban farming techniques. The organization has helped kick start several other urban farms. The Table restaurant in Churchgate, for example, came to Fresh and Local when they wanted to start an organic garden to supply their kitchen with fresh vegetables. Fresh and Local has also helped begin farms at the Dongri Girl's Home, the SNEHA women's home, and Breach Candy Country Club. In this way, Fresh and Local has worked to spread urban agricultural practices in Mumbai.

I gathered information about Fresh and Local specifically and urban agriculture in Mumbai in general during a site visit to the Flyover Farm and an interview with Adrienne Thadani. I also visited The Table and held an interview with the restaurant's owner, Gauri Devidayal.¹²

¹¹Julius Rego (Founder of Green Souls) in discussion with the author, April 2014.

¹² Adrienne Thadani (Founder of Fresh and Local) in discussion with the author, April 2014.

Under the Tree:

Under the Tree is an organization that runs organic gardening classes in Mumbai. Anusha Babbar, a landscape architect and the former owner of Green Grower nursery in Bandra, Mumbai, founded the organization in 2011. Babbar holds classes in her terrace garden in Bandra, a neighborhood in central Mumbai. She focuses on spreading her love of plants to others in Mumbai and showing urbanites how to grow food in the city. I held an interview with Anusha Babbar in her terrace garden in Bandra and attended one of her urban agriculture workshops. This interview and site visit allowed me to explore a slightly different model of educational gardening in Mumbai.¹³

Railway Farms:

Mumbai's railway farms are an important piece of urban agriculture in the city. Unfortunately, time and language constraints prevented me from interviewing railway farmers. Instead, I held an interview with Nanda Kumar, who has done extensive work with railway farmers.¹⁴ Fresh and Local has also worked with railway farmers in Mumbai, and Adrienne Thadani was also able to give some insight. To supplement, I will often refer to the most comprehensive study done on Mumbai's railway farms. This study was done by Jose Vazhacharickal et. al. for the Journal of Agriculture and Rural Development in the Tropics and Subtropics. 38 farms along the western, eastern, and Hudson lines were visited and all affiliated families were interviewed.¹⁵

¹³ Anusha Babbar (Founder of Under the Tree) in discussion with the author, April 2014.

¹⁴ Nanda Kumar (Independent Railway Farm Researcher) in discussion with the author, April 2014.

¹⁵ Jose Vazhacharickal, Martina Predotova, Dornadula Chandrasekharam, Sharat Bhowmik, and Andreas Buekert, "Urban and Peri-Urban Agricultural Production Along Railway Tracks: A

Battery Urban Farm:

The Battery Conservancy established the Battery Urban farm on the southern tip of Manhattan, New York City, in 2010. The farm is primarily focused on education, and hosts about 50 school groups a year. Additionally, the Battery Urban Farm holds a semester-long urban agriculture course for first graders and a series of adult education classes. Through a site visit and an interview with Nicole Brownstien, the farm educator, and correspondence with Josie Connell, the head manager, I gained insights and information both about the Battery Urban farm specifically and about educational gardens as a whole.¹⁶

Randall's Island Urban Farm:

The Randall's Island Urban Farm is a one-acre non-profit farm located within Randall's Island Park in Manhattan. Horticultural managers of the park founded the farm in 2007 as an educational space. The farm hosts a series of school groups from New York City public schools each year. The Randall's Island Park Alliance funds the space and provides the necessary staff and expertise. The urban farm also works closely with Grow to learn NYC. Nick Storrs, the farm manager, gave me a tour of the space and an extensive interview. Through this experience, I gained a wealth of information about the different techniques Randall's Island Urban Farm uses to teach children about sustainable agriculture and healthy eating. Storrs was also able to speak about the barriers that non-profit educational farms face when attempting to reach schools in

Case Study from the Mumbai Metropolitan Region" *Journal of Agriculture and Rural Development in the Tropics and Subtropics* 114, no. 3, (2013): 145.

¹⁶Nicole Brownstien (Farm Educator at Battery Urban Farm) in discussion with the author, September 2014. Josie Connell (Head Manager at Battery Urban Farm) in e-mail discussion with author, September 2014.

lower-income communities. These insights informed sections of this paper dedicated to educational farming and to inequalities in access to school gardening.¹⁷

Grow to Learn NYC:

Grow to Learn NYC is a non-profit organization that supports school gardens throughout New York City. The organization formed in 2011 as an offshoot of GrowNYC. Grow to Learn NYC receives funding and other resources from the Mayor's Fund, the Department of Parks and Recreation, and the Department of Education. The organization currently has 435 registered school gardens. They provide these spaces with soil, grant money, tools, seeds, and any other necessary resources. Additionally, Grow to Learn NYC holds a series of workshops for school garden leaders. August Williams-Eynon and Ellen Winston sat with me for an interview and provided extensive information about the school garden movement in New York City.¹⁸

P.S. 29:

Public School 29, an elementary school located in Cobble Hill, Brooklyn, has had a school garden since 2008. The garden falls under the school's Wellness program. Students of all grades visit the garden during science classes. Topics such as pollination, food miles, and composting are covered in the garden. Second graders spend an entire year in the garden and participate in garden planning. Tina Reres, a science teacher at P.S. 29 and the founder of the garden, gave me an interview and a tour of the site. Through this interview, I was able to understand the role that a school garden can play in both traditional science education and in informal environmental and nutritional learning. Reres was also able to speak more generally

¹⁷Nick Storrs (Head Manager, Randall's Island Urban Farm) in discussion with the author, September 2014.

¹⁸ August Williams-Eynon (Staff at Grow to Learn NYC) in discussion with the author, September 2014. Ellen Winston (Staff at Grow to Learn NYC) in discussion with the author, September 2014.

about the school gardening movement using anecdotes that she has heard from teachers and parents in other schools. In this way, Reres was able to speak about the challenges faced by school gardens and the inequalities present in the school gardening movement.¹⁹

Phoenix Street Community Garden:

The Phoenix Street Community Garden is a 19,000 square foot space in Brooklyn that has been an active piece of the community since 2007. A portion of the space is run like a traditional community garden, where members of the community can pay a yearly fee for a plot. Volunteers from Neighbors Together, a local soup kitchen, farm other portions of the garden. Neighbors Together use the food that they produce in their meals. The garden is currently registered with GrowNYC and GreenThumb and received the funding necessary to start the garden from Green Guerillas. Many other community groups such as local churches, daycares, and youth clubs participate in the garden and use it as an outdoor community space. Sharon Sockwell, one of the members of the garden, gave me a tour of the space and the soup kitchen. She was also able to provide insight into the goals, challenges, and the history of the space. Through this interview and site visit, I was able to explore an example of the role a community garden can play in a neighborhood and to understand the challenges that a garden faces in a low-income area.

The Garden of Happiness:

The Garden of Happiness is a 120 square foot community garden in East Tremont, a neighborhood in the South Bronx. Founded in 1985, the garden is one of the oldest community gardens in New York City and will celebrate its thirtieth birthday this summer. The garden's founder, Karen Washington, is still highly involved in the space and was kind enough to speak

¹⁹ Tina Reres (Teacher at P.S. 29) in discussion with the author, January 2015.

with me about her experiences. Washington is also a chair member on the American Community Garden Association, and was able to provide a wealth of information about New York City's community gardening movement.²⁰

Additional sources:

Additional secondary and primary sources were used to provide context and a broader view of each city's urban agriculture movement. These sources were largely municipal records that contextualize the efforts of urban agriculture organizations or secondary sources that focus on urban agriculture in each city. These sources were used to support claims made in the interviews or to introduce new perspectives that interviewees may have not touched on.

Overview of Social Movement Theory:

Social movement theory, which is actually a collection of theories, helps us conceptualize why people organize to promote a given cause. Today's four most popular social movement theories, resource mobilization theory, political opportunity structure, ideologically structured action, and new social movement theory, work together to explain how social movements function. They can be used to explain why a given movement is successful or unsuccessful, why movement leaders choose certain tactics over others, and why movements with similar goals look different in different locales. This study uses social movement theory to compare the urban agriculture movements in New York City and Mumbai in an attempt to understand why both developed divided networks and face resource allocation issues. A brief description of each theory is given below.

Resource mobilization theory deals with the resources available to the movement and the movement's ability to mobilize these resources. Because this study is particularly focused on

²⁰ Karen Washington (Founder of the Garden of Happiness) in discussion with the author, January 2014.

discrepancies in resource access, resource mobilization theory is particularly relevant. It is important to note that resource mobilization theory deals with both tangible and intangible resources. Traditionally, tangible resources include money, meeting space, and other material goods that a movement needs to succeed.²¹ In the urban agriculture movement, tangible resources include soil, seeds, gardening tools, land, and water. Additionally, organizations that promote urban agriculture may need resources such as office space, computers, and additional finances associated with hiring a full-time staff or acquiring transportation. Intangible resources are things such as knowledge, access to information, and time. In the urban agriculture movement, knowledge of agricultural practices is a very important resource that several urban gardeners lack. Additionally, time is a big factor in the success of an urban agriculture movement. Some organizations have the ability to hire full-time staff, while others are entirely made up of volunteers that participate in their spare time. Because growing food is such a time consuming process, time is a very important resource to consider in this study.

Resource mobilization theory also deals with the movement's ability to mobilize the resources available to it. There are several things that could potentially limit an organization's ability to access resources. According to Freeman, values, relationships with target groups, past experiences, and expectations are all examples of things that could potentially limit a group's access to resources.²² We should also keep in mind that it takes resources to mobilize resources. For example, an organization may have to spend money on advertising to reach the people they need to succeed. Not having enough resources to access other, crucial resources can be

²¹Jo Freeman, "Resource mobilization and strategy," in *The Dynamics of Social Movements*. (Cambridge, Mass: Winthrop Publishers, 1979), 170.

²²Jo Freeman, "Resource mobilization and strategy," in *The Dynamics of Social Movements*. (Cambridge, Mass: Winthrop Publishers, 1979), 170.

detrimental to a movement. Throughout this study, we will keep in mind those factors that hinder a garden's access to resources available.

A second social movement theory, political opportunity structure, is used to evaluate a movement's relationship with the government. Specific governmental policies, government structure, and the accessibility of politicians all have a profound impact on a given movement.²³ This theory is essential to the comparison of urban agriculture movements. Urban farms and gardens are affected by governmental policy on the city, state, and federal level. Government policies can open doors by making funds, vacant land, or resources available to urban farmers. Government can, however, take an opposing role by backing developers or blocking access to resources and funds. The ability for urban farmers and gardeners to influence governmental decisions affects the success of the movement and influences the tactics that urban farmers utilize. Political opportunity structure will be used to evaluate each movement's relationship with the government, and to determine the effect that this relationship has on resource allocation. The study will also explore the disparities that exist within each movement when it comes to access to government.

The final two social movement theories, new social movement theory and ideologically structured action theory, deal with the values held by a given social movement. Both theories are based on the idea that new social movements, or movements founded post-1960, hold a set of core values that cannot be compromised. According to Offe, new social movement theory conceptualizes how an organization's values affect network formation. In other words, the values that a social movement organization holds dictates what organizations or municipalities the

²³ Sidney Tarrow, "Political Opportunities and Constraints" In *Power in Movement: Social Movements and Contentious Politics.*, ed. Peter Lange (USA: Cambridge University Press, 1998), 71.

social movement organization is willing to work with.²⁴ Ideologically structured action, on the other hand, deals with how the values of a social movement organization affect the resources it has access to. Dalton explores this phenomenon in the context of environmental movements, and finds that an environmental social movement organization's core values dictate the actions it is able to take to secure resources.²⁵

The causes behind the formation of separate networks within each urban agriculture movement are complex. The values held by each garden or support organization, the resources available, the role of the government, and many more factors construct these networks and dictate their ability to succeed. It is therefore necessary to use all four of the above mentioned social movement theories to fully understand the disparities and tensions within these two movements.

Is Urban Agriculture a Social Movement?

It is important to pause here to address the fact that urban agriculture is not a traditional social movement. Participants in this "movement" do not farm the city for one reason, nor do they always act as a cohesive body. Oftentimes, urban gardens in one part of a city will not even know an urban farm in another neighborhood exists. It is therefore extremely difficult to generalize about an urban agriculture movement as a whole.

Most social movements, however, have a variety of players that are not always in direct contact with one another. A movement may even faction into two or more groups that come into

²⁴Claus Offe, "New social movements: Challenging the Boundaries of Institutional Politics," *Social Research* 52 no. 9 (1985): 817.

²⁵Russell Dalton, *The Green Rainbow*. (New Haven, CT: Yale University Press, 1996): 12

opposition with one another.²⁶ The thing that unites these movements is their cause or their goal, that thing that they are trying to promote. In the case of urban agriculture, all participants are trying to promote the practice of growing food in an urban environment. Urban farmers may not pursue urban agriculture for the same reasons, but they require the same resources and benefit from similar governmental actions. Additionally, just like more traditional social movement organizations, the actions that urban farms and gardens take are dictated by their values. Therefore, social movement theories are acceptable tools to use when conceptualizing and comparing urban agriculture in both locales.

Study Layout:

This first chapter outlined the general topics that will be addressed throughout the paper, the methodology used to gather data on each movement, and the social movement theories that will be utilized to deconstruct the reasons behind disparities within the two movements. This final section of the first chapter provides a brief overview of the chapters to come.

Each movement is rooted in its history. The resources available to each movement are dependent on past actions and relationships. The next chapter of this study gives a brief overview of the history of the urban agriculture movements in both cities and contextualizes these movements within the history of agriculture in each nation.

Chapter three will give a more detailed description of the current state of both urban agriculture movements. This chapter will include an account of the tangible and intangible resources available to both movements and a categorization of the goals that different movement players have. The purpose of this chapter is to establish a solid understanding of the two

²⁶Jo Freeman, "Resource mobilization and strategy," in *The Dynamics of Social Movements*. (Cambridge, Mass: Winthrop Publishers, 1979), 168.

movements and to compare the resources available and the goals that they foster. The last section of this chapter will outline the similar challenges that the two movements face.

In Chapter four I will utilize social movement theory to explain why these disparities exist in these two distinct movements. All four social movement theories will be included to get a well-rounded conceptualization of the problem. First, each social movement will be used individually to show what insights can be gained by a single theory. Next, the insights gained from each theory will be combined to create a holistic view of the movement and to account for all of the complex factors that impact it.

Chapter five concludes this study with a summary of the insights gained from the in-depth analysis of these two social movements. The reasons behind the disparities in resource access will be discussed. Additionally, this chapter will include suggestions for further research. Lastly, I will discuss the implications of the study and conclude with any suggestions for urban agriculture leaders that may arise from it.

History of Urban Agriculture in Two Cities

Major Developments in Mumbai and New York City's Urban Agriculture Movements from 1800-Present

The nature of urban agriculture in both cities has evolved significantly with changes in the urban environment. In Mumbai, urban agriculture began as a strictly informal and privatized phenomenon, but has gradually taken on a more formal nature. Throughout New York's history, urban agriculture has acted as a method of resilience against poverty, a wartime morale booster, and an antidote to urban decline. This chapter provides an overview of the history of both movements. This history contextualizes the modern movements and provides significant insights into how each movement developed.

History of Urban Agriculture in Mumbai:

An understanding of the history of agriculture in India is paramount to understanding urban agriculture's role in Indian cities. India's modern-day agricultural system stems from a series of famines in the 1940's during British imperial rule. These food shortages were one of the driving factors for Indian independence, and food security for all was one of the new Indian National Government's priorities immediately after independence in 1947. This goal also supported the government's focus on industrialization because large quantities of food were necessary to feed India's new workforce.²⁷ Because food security was the main focus, Indian agricultural policy focused on keeping food prices low and ensuring that there was always an abundance of food crops. Many members of parliament criticized these policies, pointing out that

²⁷ Bipan Chandra, "The Rise and Fall of Economic Nationalism in India" (New Delhi, India: People's Publishing House, 1996):2013.

they were too focused on food prices and ignored technical innovations that could increase productivity.²⁸ In other words, there was a great deal of pressure for the modernization of Indian agriculture.

During the 1950's, India looked west for help modernizing their food system. During this decade, India partnered closely with the United States in order to achieve the level of technological advancement that many parliamentary leaders had deemed necessary to achieve food security. The Indian government partnered with several major U.S. organizations in order to mechanize the Indian agricultural system. These organizations provided irrigation, fertilizers, and seeds to rural Indian farmers along with any necessary training. In 1952, the Indian and U.S. governments signed a bilateral treaty that formalized the U.S.'s involvement in Indian agriculture and incorporated India into the U.S.'s Technical Cooperation Program. This treaty set aside 54 million dollars for agricultural technology and the hiring of local technicians. By this time, the U.S. had already developed biological and chemical agricultural technologies such as high-yielding seeds and incredibly potent fertilizers. Moreover, the U.S. had already used these technologies in order to bolster food supply in other developing countries. It was therefore assumed that these technologies could be of use in India, and they were quickly implemented throughout the subcontinent.²⁹

During the 1960's, American research companies produced genetically modified high-yielding varieties of rice, and Indian staple. During this time, the U.S. extended their involvement in India and other developing countries' agricultural systems. In 1968, The U.S.

²⁸ Madhumita Raha, "The State, Scientists, and Staple Crops: Agricultural "Modernization" in Pre-Green Revolution in India" in *Agricultural History Society* (New Delhi: India, 2013): 85.

²⁹ Bipan Chandra, "The Rise and Fall of Economic Nationalism in India" (New Delhi, India: People's Publishing House, 1996).

Agency for International Aide begun using the term “Green Revolution” in reference to the use of high yielding varieties in the developing world. During this time period, crop production soared throughout countries that participated in this “Green Revolution”.³⁰

The history of urban agriculture in Mumbai is directly linked with agricultural trends throughout the country. Gardens on terraces, kitchen windows, and backyards have been a part of urban living since the emergence of Indian cities. These gardens were used to sustain or at least supplement a family’s food needs, or to provide some extra income.³¹ The Green Revolution and industrialization of the 1960’s and 70’s lead to increased rates of urbanization throughout India which, in turn, lead to a decrease in space for kitchen and terrace gardening. Additionally, the Green Revolution sparked a cultural shift that contributed to urban agriculture’s decline. After the Green Revolution, highly mechanized agriculture made it so that it was no longer common for every Indian household to farm or garden. Instead, urban families could prioritize other things such as work or leisure.³²

Formalized urban agriculture in Mumbai began in 1975 when Indian Railways launched their “Grow More Food” campaign. This campaign leased vacant land along railways to railroad employees for vegetable production. The original intent of the campaign was to ensure that vacant land near the railroads in Mumbai would not be taken over by slums.³³ 176 hectares, or 435 acres of Indian Railways’ land was leased to these employees, and the area is still up for temporary leases today. This program was set up during the height of the green revolution, and

³⁰ “International Food Policy Research Institute Annual Report,” (Annual report, Washington D.C., USA, 2002).

³¹R.J. Ganapathy “Development of Urban Agriculture in India: Public Policy Options” *Indian Institute of Management Working Paper Series* 1, no. 1 (1983): 3.

³²*Ibid.* 7

³³Sandeep Unnithan, “Central Railways Leases its Land to Employees for Vegetable Production in Mumbai,” *India Today* (2001): 1.

the gardens were built accordingly. Although these railway gardens are on a smaller scale than traditional Green Revolution farms, they still rely heavily on chemical inputs and hybridized varieties popular. Additionally, these gardens typically only grow one or two crops.³⁴

Beginning in the mid-1980's, organizations and individuals began to note the negative implications of Green Revolution practices. Most notably, the scholar Vandana Shiva wrote a series of books that pointed out the ways in which this new agricultural system was affecting her country. In her book *Biopiracy*, Vandana Shiva examines the damage that Green Revolution technologies can have on the soil and on the local economy. According to Shiva, the type of intensive agriculture promoted by the Green Revolution is too output-focused, and does not account for how these high-yielding varieties strip the soil of its nutrients.³⁵ Additionally, Shiva argues that intensive monoculture farms separate farmers from the traditional agricultural knowledge that is so important to Indian culture.³⁶ Lastly, Shiva points out the ways that these technologies have stripped Indian farmers of their power. Farmers that use green revolution techniques must continuously pay companies for fertilizers, pesticides, and seeds. This leaves many farmers indebted to agricultural companies. In her book, Shiva goes so far as to call this relationship between Indian farmers and American seed companies “the second coming of Columbus”, implying that the green revolution is a type of colonialism.³⁷

In addition to the environmental and cultural repercussions of Green Revolution farming, several studies have shown the detrimental effects that this type of agriculture can have on

³⁴Jose Vazhacharickal, Martina Predotova, Dornadula Chandrasekharam, Sharat Bhowmik, and Andreas Buekert, “Urban and Peri-Urban Agricultural Production Along Railway Tracks: A Case Study From the Mumbai Metropolitan Region,” in *Journal of Agriculture and Rural Development in the Tropics and Subtropics* (2013): 145.

³⁵ Vandana Shiva, *Biopiracy* (Cambridge, MA: South End Press, 1997): 45.

³⁶ *Ibid.* 72-79.

³⁷ *Ibid.* 1.

human health. The haunting image of the Punjabi “cancer train” that takes patients from Punjab, a farming region in Northern India, to Bikaner, the location of the closest treatment center, appears frequently in Indian popular media. Researchers from India’s top medical institutions have linked the high cancer rates in Punjab to the fertilizers used in that region.³⁸

A second type of urban gardening has emerged in Mumbai in response to these concerns. Over the past five years, a series of urban farming nonprofits have sprung up around Mumbai. These farmers are usually middle to upper class and do not rely on the vegetables they produce for income or nutrition. The specific goals of these organizations will be explored further in the next chapter, but these organizations are typically more focused on environmentalism, the production of chemical-free produce, and education than on food security.

These new urban gardens and farms are inspired in part by concerns about the practices used in Green Revolution farming. This new form of urban agriculture is a part of the next chapter in the history of Indian agriculture. Urban farming and gardening is seen as a means to re-localize the food system and to regain control over the practices used to produce food. In the next chapter, we will explore the current state of urban agriculture in Mumbai in more detail.

History of Urban Agriculture in New York City

Urban agriculture in the United States has a long and complex history that dates back to the 1890’s. Throughout this time, urban agriculture has acted as a relief effort, a social justice movement, an educational campaign, and much more. It has involved a wide variety of stakeholders, from small non-profits to the federal government. Historically, New York City has been a leader to American urban agriculture movements and an example of a highly functional

³⁸ J.S. Thankar and B. T. Rao. "Epidemiological Study of High Cancer Rates among Rural Agricultural Community of Punjab in Northern India." *International Journal of Environmental Research and Public Health* 5.5 (2008): 399. Print.

urban farming community. Although the movement has faced a multitude of challenges and has undergone a series of changes, gardens have been an integral part of New York City for over a century. Today's urban gardens are deeply rooted in this complex history and are intensely affected by their past.

The first instances of urban agriculture in the United States popped up in the 1890's in response to the economic depression of 1893. The first major urban garden movement in the U.S. was Mayor Pinngree's "potato patches" in Detroit. Mayor Pingree encouraged vacant lot cultivation as a means to provide extra income and food for those hit hardest by the depression. These gardens provided some relief to charitable organizations who were overrun with starving citizens. In 1895, the success of these "potato patches" inspired Bolton Hall, a New York City lawyer and activist, to spearhead a vacant lot cultivation movement in New York. Hall worked with the New York City Association for Improving Conditions for the Poor to promote urban gardens as a charitable activity. Thus, urban agriculture in New York City began as a charitable effort aimed at alleviating poverty and hunger.³⁹

The promotion of school gardens took off about a decade later, in the early 1900's. Rapid urbanization caused many American citizens to worry that their children would lose their agrarian roots. This motivated proponents of urban agriculture to devote particular attention to the promotion of gardening in urban schools. High levels of poverty in urban areas were having a negative impact on retention rates because many parents believed that it was more valuable for their child to learn a trade. School gardens in urban areas were one of a series of efforts that tied

³⁹Laura Lawson, *City bountiful: A Century of Community Gardening in America* (Los Angeles, California, University of California Press, 2005): 26

in-school education to practical skill development. Additionally, school gardens gave urban children access to the outdoors, which was believed to be an antidote to delinquency.⁴⁰

During this time period, New York City developed one of the most successful school gardening campaigns in America. Fannie Griscom Parsons started the Dewitt Clinton Farm School in 1902. This farm was run in conjunction with the New York City departments of Education and Parks and acted as a model of how to efficiently garden in an urban environment. Parsons taught hundreds of children, teachers, and parents the basics of cultivation, and several schools began to create their own gardens.⁴¹ By 1917, there were 97.19 acres of garden in New York City, 76.23 of which were affiliated with educational institutions.⁴²

Urban farming in America changed drastically during the late 1910's. Food shortages due to World War I spurred a national War Garden Campaign. Gardening was seen as a way to show one's patriotism and to help out in the war effort. "War Gardens" started popping up all over the country, and by 1917 there were 3.5 million community gardens in the United States.⁴³ This voluntary movement was supported by a myriad of government organizations such as the Food Administration, the National War Garden Commission, and the U.S. School Garden Army.⁴⁴

New York City's response to wartime food shortages mirrored the federal government's. In 1917, Mayor John Mitchel started the War Garden Committee of Manhattan, a support system for new urban gardens. The committee also set up demonstration gardens in Bryant Park and

⁴⁰ Ibid. 30.

⁴¹"Farm Gardens: Planting the Seed," *NYC Parks: Official Website of the New York City Department of Parks and Recreation* 2014, <http://www.nycgovparks.org/about/history/community-gardens/farm-gardens>.

⁴²Laura Lawson, *City Bountiful: A Century of Community Gardening in America* (Los Angeles, California, University of California Press, 2005): 84.

⁴³ Ibid. 118.

⁴⁴ Rose Hayden-Smith, *Sewing the Seeds of Victory: American Gardening Programs of World War I* (McFarland & Company, Inc., 2014), 5.

Union Square. These gardens served as a space where anyone interested could come and learn how to grow their own food. Additionally, these gardens served to prove that vacant lots could be successfully transformed into productive gardens. The demonstration garden in Union Square, for example, was built with only a foot of soil above the subway in order to show skeptics that a garden could be built anywhere.⁴⁵

School gardens also played a large role in the war garden campaign in New York City. Frannie Grimscom Parkins once again rallied support for urban gardening by starting the Children and Adult War Gardening Committee. This committee paid public school teachers for time spent teaching gardening to their students or to the local community. This committee coupled with an increase of federal and state financial support encouraged many New York City public schools to open their own gardens.⁴⁶

The major shift that took place during this time period was that the urban agriculture movement was no longer focused on helping a particular group of Americans. The spike in war gardens was in response to a crisis that affected most if not all Americans. This was the reason that so much federal attention was given to gardening efforts during this time, and why so many community gardens popped up throughout the country. But the crisis-focused nature of these gardens was also why so many of them disappeared after the war was over. Although small groups of activists and nonprofits still advocated for urban agriculture, efforts dwindled rapidly after the War.⁴⁷

⁴⁵“From the Archives: The Victory of Vegetables,” *Bryant Park Blog*, 2015, <http://blog.bryantpark.org/2011/04/from-archive-victory-of-vegetables.html>.

⁴⁶Rose Hayden-Smith, *Sewing the Seeds of Victory: American Gardening Programs of World War I* (McFarland & Company, Inc., 2014), 72-97.

⁴⁷ *Ibid*, 192.

A second 18th-century boom of urban gardens also occurred in response to a major American crisis. The Great Depression led to the promotion of “relief gardens” by federal and state governments. “Relief gardens” provided the unemployed with paid job opportunities or with the land and supplies to grow their own food. The Works Projects Administration (WPA), a New Deal work relief program, sent thousands of workers to farm vacant lots in urban areas. In New York City, the WPA was responsible for starting over 5,000 vacant lot gardens that produced 2.8 million dollars worth of food in 1934.⁴⁸ The success of this movement was cut short, however, when the federal government changed the way that they approached relief and abandoned the garden program in 1935. Many urban gardens relied on the WPA for funding, labor, and organizational structure. In a similar fashion to the post- WWI era, urban gardens shut down all across the country.⁴⁹

Support for urban and community gardening surged almost immediately after the U.S. entered World War II. Citizen’s groups founded the American Victory Garden Campaign just twelve days after Pearl Harbor. There was not nearly as much federal or state support for urban gardening as during World War I and the great depression, however. Instead, the focus was on the promotion of rural farms that could produce greater quantities of food. The gardening efforts that did pop up were often in conjunction with businesses that had unused land. The National War Garden office of New York City supported businesses that wanted to lease land to urban gardens and put pressure on local government to make ration exceptions that supported urban

⁴⁸ “The Union Square Demonstration Back Yard Garden and Subsistence Gardens”, *NYC Parks Department*, 2015, <http://www.nycgovparks.org/about/history/community-gardens/not-just-for-kids>.

⁴⁹ Laura Lawson, *City Bountiful: A Century of Community Gardening in America* (Los Angeles, California, University of California Press, 2005): 230.

gardening initiatives. The institute did start several gardens throughout New York City, but they were always meant to be temporary and most were dismantled by the end of the war.⁵⁰

The end of WWII marked a lull in American interest in urban agriculture until the 1970's. A few community and school gardens persisted, but no national or city wide campaigns took place during this time period. During the 70's, however, the energy crisis, an upswing in environmental awareness, and concerns over rising food prices created the perfect environment for a renewed urban agriculture movement. The urban gardens that formed during this time period were very different from those that had come before them. During this time period, urban gardens were used to combat racial tensions and urban decline. The popularization of suburbs that took place after World War II drew the rich away from urban areas and trapped the poor in rapidly diminishing neighborhoods. Urban housing projects quickly became places of violent and drug-related crime. Many cities responded by tearing down public housing, leaving residents with even fewer resources. Civic and community organizations promoted urban gardens as a more viable alternative to these "renewal" schemes.⁵¹

In 1974, the New York City Housing Authority's gardening program began to promote vegetable production to increase participation, combat food insecurity, and to make public housing developments safer. NYCHA's gardening program collaborated with local communities to put at-risk youth in charge of housing authority gardens. This program was highly successful because NYCHA drew on community knowledge to give residents a feeling of ownership over the gardens. This program addressed issues of urban decline by beautifying neighborhoods, creating safe spaces for residents to recreate, and providing supplemental nutrition for local

⁵⁰ Ibid. 170-205

⁵¹ Ibid. 213-238

families. Additionally, it kept the gardens safe by ensuring that individuals who may be a threat to these gardens had a sense of connection to the space.⁵²

Another development in the 1970's was that urban gardening organizations started to form networks on the city level. Because urban gardens were becoming more than a place to generate food, many community gardens needed extra support to run all of their different programs. The Green Guerillas and Operation Green Thumb were two such organizations in New York City. Formed in 1973, the Green Guerillas rallied support for community gardens from politicians, community organizations, and charitable organizations. The organization also acted as a resource for budding community gardens by providing the knowledge and, when possible, the materials for neighborhoods to create their own gardens. When a garden faced adversity, the Green Guerillas also made it possible for urban farmers to rally together to put pressure on the government, developers, or whatever else was threatening the garden.⁵³ Operation Green Thumb was created out of the city government's general services fund in 1978. The organization ensured that urban gardens had access to the land they needed at prices they could afford. Green Thumb leased vacant city-owned property to community gardens for one dollar per year.⁵⁴ These citywide organizations ensured that urban gardens had the support they needed and a network to fall back on.

Issues between housing developers and urban gardening advocates started to threaten New York's urban farming movement in the 1980's and 90's. During this time, the city's population began to pick up and space became a valuable commodity again. Developers began reclaiming gardens that were built on vacant lots in the 1970's. In some instances, community

⁵²“Green NYCHA: Resident gardening communities”, *New York Housing Authority*, 2015, <http://www.nyc.gov/html/nycha/html/community/greennycha.shtml>.

⁵³ “Green Guerillas: History”, *Green Guerillas*, 2015, <http://www.greenguerillas.org/history>.

⁵⁴ “GreenThumb: About”, *GreenThumb*, 2015, <http://www.greenthumbnyc.org/about.html>.

gardeners were able to push back using the networks formed in the 1970's. The Clinton Community Garden, for example, fell back on the support of the Green Guerillas, The Trust for Public Space, and the Housing Conservation Coordinators when the city threatened to sell the well-established garden to developers in 1981. The organizations formed the Committee to Save Clinton Community Garden and sold square inches of the property for one dollar apiece. Celebrities, non-profits, community members, and many more bought up the entire property and the garden still exists today.⁵⁵

Most gardens that faced pressure from developers were not so successful. In 1995, Operation Green Thumb ended its lease program, putting 300 gardens in jeopardy. The New York City department of revenue mandated that the gardens be auctioned to developers or developed directly by the Housing Authority. Community gardeners organized rallies outside the mayor's office to save the gardens and community organizations filed a series of lawsuits against the city. Just one day before the properties went up for auction, the New York Supreme Court mandated that the city government complete an environmental impact report that ensured that the destruction of these gardens would not put New York City's environmental quality in danger. The city quickly sold the properties to The Trust for Public Land, a national organization that protects public green spaces. The Trust gave the gardens back to the communities and that formed them and developed a series of multi-neighborhood trusts for support and guidance.⁵⁶

Although New York City community gardens have not faced a challenge on this scale since 1995, there is still no formal policy protecting urban gardens. This means that conflicts with developers need to be fought on a case-by-case basis because there is nothing legally

⁵⁵ Laura Lawson, *City Bountiful: A Century of Community Gardening in America* (Los Angeles, California, University of California Press, 2005): 259.

⁵⁶ Ibid. 270.

distinguishing many community gardens from vacant lots. In 1996 alone, six community gardens in Bushwick and 17 community gardens in Harlem were destroyed by developers. One of the main focuses of the Green Guerillas since 1995 has been promoting public policies that favor gardens throughout New York.⁵⁷

A major development that has taken place in the past decade is the formation of commercial urban gardens in New York City. The city has three commercial farm organizations that run seven commercial farms, and all were founded in the past five years. These farms differ from previous forms of urban agriculture in New York City because they are businesses whose primary goals are production and the promotion of local food systems for environmental reasons. Although some of these commercial farms run educational, social, or community-development oriented programs, this is not the main focus of the space. This marks a shift from the historical role of urban agriculture in New York City. The role of commercial farms in modern urban agriculture is discussed further in the following chapter.

The current state of urban agriculture in New York City will be discussed in further detail the next chapter, but let us pause here for a moment to take note of major trends in the history of the movement. Firstly, urban farming in America was often sparked by times of crisis. Whether a war, a depression, or major urban decline, every spike in the popularity of urban agriculture was inspired by a perceived crisis. It is striking how regularly Americans react to crisis by taking to the spade. The other side of this picture, however, is that there were times in American history where gardens lay fallow or were destroyed due to lack of interest.

Although there has been no great lull in interest since the 1970's, this pattern of instability persists. The American Association of Garden's 1990 and 1996 surveys showed that

⁵⁷ Ibid. 264-287.

in these six years 2,123 gardens had been created but nearly 600 gardens had been abandoned and destroyed.⁵⁸ These gardens closed down because of lack of interest, loss of public agency, or the loss of a private investor. This trend shows that, while there may be great enthusiasm for starting urban gardens, communities have a difficult time keeping these spaces open and running.

A third trend we see in the history is the use of urban agriculture as a method of poverty alleviation. From the “potato patch” movement right through the use of urban gardens to combat urban decline, urban agriculture has been used to give the poor access to healthy food or to give poorer communities green areas to recreate. In the next chapter, we will touch upon the extent to which this has changed in modern times.

Lastly, we should note that urban agriculture in America took on environmental goals very recently. It is easy to think of urban agriculture as a purely environmental movement, but it has historically been geared toward more social goals. Food security, poverty alleviation, and education were the main focus of the movement since the 1890’s. All though environmentalism has always been a component of the argument for urban agriculture, it was not until recently that it took center stage.

⁵⁸ Ibid. 241.

Urban Agriculture Today

Overview of Resources, Goals, and Challenges

Today, urban farming is an integral part of both Mumbai and New York City. This chapter provides an overview of the resources available to both movements, as well as of the goals and challenges that both movements foster. The first section of this chapter will focus on the resources available to each movement and will provide a foundational understanding of the two modern-day urban farming communities. The second section of this chapter focuses on the different goals that each movement fosters. An exploration of movement goals is crucial to understanding the reach of each movement and is an integral part in describing challenges. The last section of this chapter details the challenges that each movement faces. Throughout this section, it will become apparent that, although they focus on drastically different goals and have access to very different resources, the two movements suffer from similar challenges.

Resources Available

Size and Scope

Perhaps the most obvious difference between the two movements is their size and scope. In Mumbai, There are approximately 35 spaces that can be considered urban gardens, 20 of which are railway farms while the other 15 are community gardens run by nonprofits.⁵⁹ Formalized urban agriculture in Mumbai is clearly concentrated along or near Mumbai's Western Rail Line. This pattern is logical for the railway gardens, but holds true for the not-for-

⁵⁹Nanda Kumar (Independent Railway Farm Researcher) in discussion with the author, April 2014.

profit gardens as well. The result is that Mumbai's gardens are spread fairly evenly on a north-south axis, but do not typically occur in eastern or western areas of the city (Figure 1). There are far more urban gardens in New York City, and these gardens are much more widespread (Figure 1). As of 2012, there were 762 gardens spread throughout New York City's five boroughs.⁶⁰

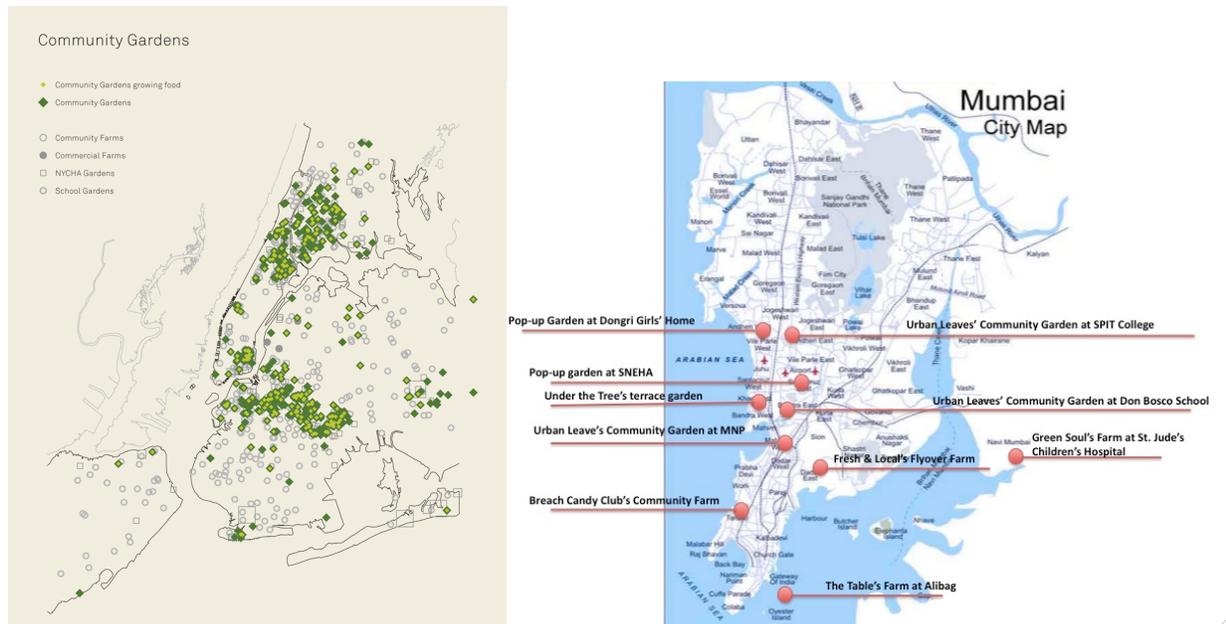


Figure 1: Maps of community gardens in New York City (left, map by Five Borough Farm. "Community Gardens in New York City," 2015.) and Mumbai (right, map created by author, 2015.). There are far more community gardens in New York City, and these gardens are more evenly distributed throughout the entirety of the city. In Mumbai, the few community gardens that there are largely in south central Mumbai.

Governmental support

⁶⁰Nevin Cohen, Kristin Reynolds, and Rupal Sanghvi. *Five Borough Farm: Seeding the Future of Urban Agriculture in New York City*, ed. Jerome Chou. (USA: USA Print Craft, 2012): 66.

Movements are influenced by the political opportunities they are given. Both Mumbai and New York City's municipal governments have specific policies that support urban agriculture as well as more general programs that provide support. These policies differ, however, in their scope and in the type of support they provide.

Mumbai's government supplies very little support for urban farmers and gardeners. The Mumbai Municipal Government does not have an environmental agency. The environment is addressed in the government's five-year plans, but has never mentioned urban agriculture as a potential route to sustainability.⁶¹ On a federal level, the Government does have a Ministry of Environment, Forests & Climate Change, but has also never focused on the promotion of urban agriculture.⁶²

The only real tie that the government has to urban agriculture in Mumbai is through the Mumbai Metropolitan Rail Corporation's "Grow More Food Campaign", which leases land along the railway tracks to urban farmers. MMR does not provide any financial, material, or informational assistance to these gardens. Farmers pay MMR for the growing space, which oftentimes does not even come with access to water. This loose tie between government and urban farmers is one of convenience and does not represent true government support.⁶³

The Relationship between urban agriculture and government looks very different in New York City. Unlike in Mumbai, the municipal government supplies funds, space, and organization for urban farms and gardens. The city runs a series of programs that are geared

⁶¹ "Municipal Corporation of Greater Mumbai", *mcmgm.gov.in*, January 14 2015, <<http://www.mcmgm.gov.in/>>.

⁶² "Ministry of Environment, Forest, and Climate Change", *Government of India*, January 14, 2015, <<http://envfor.nic.in/>>.

⁶³ Sandeep Unnithon, "Central Railways Leases its Land to Employees for Growing Vegetables in Mumbai", *India Today*, August 6, 2001, <http://indiatoday.intoday.in/story/central-railways-leases-its-land-to-employees-for-growing-vegetables-in-mumbai/1/230870.html>.

directly towards the promotion of urban gardening. Most notably, the Department of Parks and Recreation runs a program called GreenThumb, which supports community gardens throughout the city. This program allocates grants and provides material resources, labor, and knowledge to new urban gardens.⁶⁴ Additionally, the New York City Housing Authority (NYCHA) runs a program called GreenNYCHA, which has supported community gardens in public housing areas since 1963. This program allocates a portion of the NYCHA budget to providing material resources and knowledge to gardens associated with their public housing communities.⁶⁵

There are a number of governmental agencies that will occasionally assist urban farmers. The Department of Education regularly partners with nonprofit organizations such as GrowtoLearn that promote gardening in schools. The Department of Environmental Protection provides financial support for all projects that increase permeable surfaces that can absorb storm water, including rooftop and vacant lot gardens.⁶⁶ Lastly, the Office of Long Term Planning and Sustainability publishes goals for the government that relate to sustainability, including the promotion of urban gardens.

The Office of Long Term Planning and Sustainability is in charge of one of the most important governmental document that supports urban agriculture in New York City. The office publishes PlaNYC, a sustainability and resiliency plan for New York City. The document highlights the ways in which the government can ensure New York's environmental, social, and infrastructural sustainability. Urban agriculture has been a part of PlaNYC since 2011. In the most recent review of the Plan, urban gardens are mentioned under two goal categories, "Target

⁶⁴ "Green Thumb: The Largest Community Gardening Program in the Nation", January 5th, 2015, <http://www.greenthumbnyc.org/>.

⁶⁵ "Green NYCHA: Resident gardening communities", New York Housing Authority, 2015, <http://www.nyc.gov/html/nycha/html/community/greennycha.shtml>.

⁶⁶ Nevin Cohen, Kristin Reynolds, and Rupal Sanghvi. *Five Borough Farm: Seeding the Future of Urban Agriculture in New York City*, ed. Jerome Chou. (USA: USA Print Craft, 2012): 66.

High-Impact Projects in Neighborhoods Underserved by Parks” and “Promote green remediation in the NYC Brownfield Cleanup Program”. Some examples of such goals are: “Build 129 new NYCHA gardens”, “Increase Number of GreenThumb volunteers by 25%”, and “Reduce impediments to urban agriculture in relevant laws and regulations”.⁶⁷

It should be noted that PlaNYC is a strategy document that is meant to portray the goals of the administration, but that does not hold any agency responsible for fulfilling these goals. There are, however, a series of laws in place that directly promote urban agriculture. Local law 48 mandates that the Department of Citywide Administrative Services makes a list of all city owned property that has the potential for urban agriculture available to the public. Local law 49 states that Greenhouses may be excluded from building height regulations. Lastly, local law 52 mandates that the OLTPS publishes an annual report on New York’s food system.⁶⁸

Non-governmental support organizations:

Non-governmental Organizations (NGO’s) play a major role in both urban farming movements. These organizations provide knowledge, materials, space, and sometimes even funding for urban farms and gardens.

In Mumbai, NGO’s run most urban farms off of the railroad tracks. An integral part of these organizations is teaching urban residents about sustainable ways to garden in the city. All organizations visited for this study hosted community work days and held specific programs to help promote informal food production throughout Mumbai. Green Souls, for example, calls their space a “demonstration garden”, and holds workshops on building the necessary structures for kitchen and terrace gardening. Urban leaves also holds intensive composting workshops

⁶⁷ “Plan NYC: Progress Report 2014”, (Policy Document, New York City: Mayor’s Office of Long Term Planning, 2014).

⁶⁸ Nevin Cohen, Kristin Reynolds, and Rupal Sanghvi. *Five Borough Farm: Seeding the Future of Urban Agriculture in New York City*, ed. Jerome Chou. (USA: USA Print Craft, 2012): 66.

where participants learn how to build healthy soil from materials available in the city. These nonprofits do run their own gardens, but the focus is on city-wide agriculture promotion.

Mumbai lacks a city-wide nonprofit that focuses on resource distribution or network formation. Although Mumbai's urban agriculture-focused nonprofits frequently participate in community outreach, their reach typically only extends to the neighborhoods surrounding their garden or farm. One urban farmer expressed the fact that these farms and gardens are so crunched for time that outreach beyond the immediate neighborhood is often difficult. Instead, she expressed the hope that more organizations would extend the movement into new areas of the city.⁶⁹

NGO's in New York City vary in size and organizational structure. Some organizations such as GrowNYC or Green Guerrillas are involved with gardens throughout the city. These organizations focus on setting up workshops, allocating resources, and registering gardens. Oftentimes, these larger organizations will not be directly involved in the management of the gardens they oversee. A representative from Grow to learn NYC, for example, stated, "We have 435 schools, roughly, registered, but that being said we do not work one on one with all of those schools, because we have such a small staff. So we provide materials, support, education, funding"⁷⁰. Instead of providing on-the-ground assistance to all of their participants, these organizations provide support for practically any New Yorker interested in starting an urban farm.

There are also a handful of NGO's in New York City that run individual urban farms. Oftentimes, these organizations are associated with well-established urban land conservancies or

⁶⁹ Adrienne Thadani (Founder of Fresh and Local) in discussion with the author, April 2014.

⁷⁰ August Williams-Eynon (Staff at Grow to Learn NYC) in discussion with the author, September 2014.

park associations. Urban farms in these spaces are located on a portion of a larger park and are maintained by park staff. Because of this association, these organizations have access to a wealth of horticultural information that they distribute throughout the urban farming community. The Battery Urban Farm and the Randals Island Urban Farm are two examples of urban farms run by NGO's. In order to reach a wide range of city residents, non-profit farms will run educational and outreach programs. The Randal's Island Urban Farm, for example, runs free field trips for New York City public school students. The Battery Urban Farm runs a variety of different community development programs, including a community supported agriculture program, a composting program, and a semester-long urban farming program for New York City public school students. In this way, these small-scale urban farms are able to serve thousands of New York City Residents.⁷¹

People Involved

Urban agriculture movements in Mumbai and New York City also have different levels of access to people resources. In her work on resource mobilization strategy, Freeman identifies groups of people that act as “specialized people resources”. These people have special skills that are particularly important to the movement.⁷² In the urban agriculture movement, this means people with horticultural knowledge or organizational expertise. Both movements have access to these types of people. In Mumbai, “specialized people resources” are passionate individuals with horticultural expertise. Professor R.T. Doshi, for example, developed a method for building fertile soil from resources available in urban settings.⁷³ In New York City, these people are often

⁷¹ Nicole Brownstien (Farm Educator at Battery Urban Farm) in discussion with the author, September 2014.

⁷²Jo Freeman, “Resource mobilization and strategy,” in *The Dynamics of Social Movements*. (Cambridge, Mass: Winthrop Publishers, 1979), 167-173.

⁷³Preeti Patil (Founder of Urban Leaves) in discussion with the author, April 2014.

horticultural experts from the New York Botanical Garden, experienced officials from the Department of Parks and Recreation, or other individuals that happen to have farming experience. On the Battery Urban Farm, for example, horticultural experts from the Battery Conservancy train new urban farmers in their Farm Education program.

The major difference between the two movement's access to people resources is that many urban farms in New York City have the ability to hire a full or part-time staff while most urban agriculture initiatives in Mumbai lack the financial resources to do so. There are, of course, exceptions to this rule—some urban farms in New York City are entirely volunteer-driven and there are a handful of instances where urban farms in Mumbai are able to pay a part-time horticultural expert. For the most part, however, urban farms throughout New York City are able to pay for the advice or support of experienced individuals, whereas in Mumbai these individuals must donate their spare time. This difference is crucial because nearly all urban farmers interviewed cited time as one of their major challenges. Without being compensated for their time in the garden, these specialized individuals must seek alternative forms of income, which limits the time they can devote to the movement.

These “specialized people resources” are not the only people available to the movements. An urban farm or garden can only be successful with the support and participation of a large body of individuals. Gardens and farms take an incredible amount of labor. On a more basic level, urban farming programs cannot reach their goals without participants. Access to volunteers and participants looks very different in the two cities. In Mumbai, interviewees frequently cited lack of interest as a major challenge. One participant stated: “People in Mumbai work too hard and party too hard, they do not want to take the time to garden”.⁷⁴ In New York City,

⁷⁴ Anusha Babbar (Founder of Under the Tree) in discussion with the author, April 2014.

interviewees expressed the opposite problem. Several organizations mentioned that they were often forced to turn school groups away. Karen Washington from the Garden of Happiness stated that the waiting list for a bed was 30 families long and that people often waited for years for a space to grow.⁷⁵ This contrast in the access to volunteers directly affects the success of the movements and contributes to the vast differences in size and scope.

Monetary Resources

Urban farming takes a great deal of financial resources. Money is needed for seeds, gardening supplies, land, and much more. Both movements receive funding from a variety of different sources. Both New York City's commercial farms and Mumbai's railway farms support their efforts primarily through crop sales. In these cases, the farms are run like a business. Crop sales are used to buy materials that the farms need and the leftover money is profit. On New York City's commercial farms this excess money goes to pay staff, whereas in Mumbai the family keeps the money as a source of income.

The not-for-profit farms in both cities must find alternative sources of income. These farms receive aid from government agencies, non-profits, corporate partners, and private funders. Most of the time, urban farming organizations will not be completely funded by a single grant or agency. Instead, urban farms will often support themselves with an agglomeration of different funding sources.

Not-for-profit urban gardens in Mumbai also receive funding from a variety of different sources. As stated above, urban farms do not receive financial support through the government, nor is there a citywide non-profit community that helps the gardens. Private donors and corporate

⁷⁵ Karen Washington (Founder of the Garden of Happiness) in discussion with the author, January 2015.

sponsors make up the majority of the garden's financial resources. Many gardens cited using crowd sourcing tools such as Kickstarter to support their garden. Other organizations supported their gardens by charging for classes and workshops. Still others were supported by privately wealthy individuals who were passionate about gardening.⁷⁶

In New York City, urban farms receive government funding through the Mayor's Fund and GreenThumb grant programs.⁷⁷ Urban gardens in New York City supplement these funds through cooperation with non-profit organizations such as GrowNYC, land conservancies, or park associations.⁷⁸ Additionally, urban farms in New York City benefit from a variety of different corporate partners such as Home Depot and Cliffbar, which will often supply mini-grants. The farms also benefit from individual donors.⁷⁹

Why Urban Agriculture?: The Goals That Urban Farmers Foster

Urban farmers and gardeners in both cities cited a variety of different goals. In order to understand the challenges urban agriculture movements face, we must first explore what their aims are. This chapter will give a summary of the different objectives that an urban garden may possess, and will highlight the ways in which these goals differ between the two cities. This chapter will also include background information on the topics discussed, including academic research on urban gardening in general.

Environmental Education and Ecological Awareness:

The majority of the urban farmers interviewed cited some form of education as one of their major goals. Education within an urban garden can take many forms. An urban farm or

⁷⁶ Adrienne Thadani (Founder of Fresh and Local) in discussion with the author, April 2014.

⁷⁷ "GreenThumb: About", *GreenThumb*, 2015, <http://www.greenthumbnyc.org/about.html>.

⁷⁸ "GrowNYC:About", *GrowNYC*, 2015, <http://www.grownyc.org/about>.

⁷⁹ Karen Washington (Founder of the Garden of Happiness) in discussion with the author, January 2015.

garden can be formally integrated into a school's curriculum, be a space geared directly at school groups, or focus on less formal educational goals.

Some farms and gardens have programs that are geared specifically towards learning. These gardens, typically school gardens or community farms, teach students agricultural or ecological lessons. In this type of educational space, the students are usually school children that participate in these activities in a classroom-like setting. Lessons on pollination, food miles, insects, and many other ecological processes can be taught within the garden. In an interview with the founder of the garden in PS 29, the interviewee stated that the main goal of the garden was to, "provide children an outdoor space where we could teach the curriculum".⁸⁰ In other words, these spaces aim to supplement children's traditional education.

There are, in fact, a number of studies that link the presence of a school garden to higher scores on standardized science examinations. In a study done for the *Journal of Environmental Education*, Dorothy Blair analyzed a series of 12 quantitative studies that focused on school gardening projects. All 12 of these studies showed a positive relationship between student involvement in gardening and science test scores. This study backs claims made by teachers and educational farmers that agricultural education has the potential to increase test scores and to promote higher performance in traditional science curricula.⁸¹

Most gardens where education is an emphasis, however, state goals that go deeper than traditional education or teaching to the curriculum. Educational gardening can be used as a tool for promoting healthy lifestyles and instilling a sense of environmental awareness starting at a

⁸⁰Tina Reres (Teacher at P.S. 29) in discussion with the author, January 2015.

⁸¹ Dorothy Blair, "The Child in the Garden: An Evaluative Review of the Benefits of School Gardening," *Journal of Environmental Education* 40.2 (2009).

very young age. When asked to expand on the mission of the organization, Grow to Learn employee Ellen Winston stated:

The goal is to have nutrition education and experience with growing your own food. For all kids. The point being that that connection with a healthy diet and a healthy lifestyle, and by extension sustainability as a idea, can best be instilled in a young mind, and if they have that hands on experience it is not only a useful teaching tool that can be applied to other subjects but it can have like an incredible impact on their life.⁸²

Many educational farmers express a similar sentiment. These urban farmers do not simply measure their success based on test scores, but instead on a student's ability to make a connection between their food and the soil.

The literature backing up these claims is not as extensive as the research linking school gardening to higher academic performance. This is because the effect that a garden has on a child's nutritional or environmental awareness is far less concrete than test scores. There are, however, a handful of site-specific studies that link school gardening with nutritional and environmental awareness. A study completed by the University of Minnesota, for example, demonstrated that urban youth who participated in community gardens in St. Paul had a better understanding of their local food system than those who had not. Participants were able to identify fruits and vegetables that were in season and were able to articulate that these crops were healthier than others on the market. Participants were also able to critique local food quality and to discern between good and bad quality agricultural products. This led to a better understanding of which foods were healthy and which were not.⁸³

Additionally, participants in this study cited increased nutritional, agricultural, and environmental awareness in their students after educational gardening programs. When asked

⁸²August Winston (Staff at Grow to Learn NYC) in discussion with the author, September 2014.

⁸³Laura Thankar, "Culturing community development, neighborhood open space, and civic agriculture: The case of latino community gardens in new york city. *Agriculture and Human Values*.

how she measured the success of her school garden, Tina Teres stated, “One of the things is watching the children’s excitement over growing the food and actually eating it”.⁸⁴ Many urban farmers expressed this phenomenon—that children who grow their vegetables and understand where they come from are more likely to make healthy eating choices. Children are not only learning science lessons in these spaces, but are also learning important lessons about how their lifestyle affects their health and the health of the environment.

Other urban farmers educate in a more passive fashion. For these farmers, the very presence of urban agriculture increases environmental awareness and encourages learning. Travalien and Humold of Drexel University call this goal “ecological citizenship”. Ecological citizenship is defined as, “a concept that emphasizes opportunities for public participation in, and social learning about, environmental decisions”.⁸⁵ Initiatives that promote these principles include workshops, model farms, and open tours of community gardens.⁸⁶

Educational efforts within Mumbai’s urban gardens tended to focus more on the promotion of ecological citizenship rather than on formal educational goals. Increased environmental awareness or a better understanding of how food is grown was one of the top priorities for all of the community farms in Mumbai. Many urban farmers linked the importance of these initiatives to the growth of the movement. Community farming and kitchen gardening are relatively new concepts in Mumbai, and the vast majority of Mumbai’s residents are not involved in any sort of agriculture. For this reason, many urban farmers see increased environmental awareness and agricultural understanding as the first step in promoting urban

⁸⁴ Tina Reres (Teacher at P.S. 29) in discussion with the author, January 2015.

⁸⁵ Katherine Travaline, and Kristian Hunold, “Urban Agriculture and Ecological Citizenship in Philidelphia,” *Local Environment*, 15, no. 6 (2010): 1.

⁸⁶ Ibid.

agriculture in Mumbai. The following passages outline the efforts of different urban agriculture organizations promote ecological awareness in Mumbai.

Urban Leaves promotes agricultural understanding through a series of workshops on how to make Amrut Mitti compost. This unique compost is fairly complicated to produce, but makes new urban farms or household kitchen gardens much more productive because of its high nutrient and microbial content. The thought process behind these workshops is that, once urban residents have good soil to grow in, their plants will be more productive and they will therefore be more inclined to continue producing food.⁸⁷ These workshops emphasize the ways in which the composting process mimics natural processes. In “Guide to Setting Up a Natueco Farm”, Urban Leaves urges citizens to “copy nature” when developing their soil by stating, “Emulate nature’s method of fertile soil building, rather than waiting for rainfall to irrigate the soil or winds to cover the organic matter with mud you can catalyze the process by providing the required ingredients for fertile soil building”.⁸⁸ By stressing the connection between composting and natural processes, Urban Leaves increases environmental awareness. Participants leave the workshops with a better understanding of effective organic agricultural methods and the ways in which they relate to the environment.

Julius Rego, founder of Green Souls, stated that educating urban citizens about agricultural processes was his main priority. Rego stated that Green Souls’ makes a concerted effort to “teach people to grow their own food” and to “reach as many people as possible”. In order to do this, Green Souls holds a number of workshops at their farm in Khaghar. These workshops include sessions on do-it-yourself drip irrigation, bamboo trellis making, self-

⁸⁷Preeti Patil (Founder of Urban Leaves) in discussion with the author, April 2014.

⁸⁸ Preeti Patil and Dipak Suchade, *Guide to Setting up a Natueco City Farm*. 1st ed. (Mumbai, India: Vidhya Vardihi Trust,2010): 5.

watering container building, and other demonstrations of the different urban farming techniques used on the farm. Green Souls hosts workshops about once a month and attendance is usually around 30 community members. Rego states that he measures his success by how many people come back to the farm and by how many participants start their own kitchen or terrace garden.⁸⁹

Lastly, Under the Tree is an organization dedicated solely to teaching residents of Mumbai about organic gardening methods. Anusha Babbar, a landscape designer and founder of Under the Tree, holds monthly classes on gardening in “tiny spaces”. Additionally, Under the Tree does classes that cater to the specific issues gardeners in Mumbai face. For example, they hold “Gardens by the Sea” workshops to help people that live near the ocean cultivate crops effectively. Gardening can be difficult in these areas of Mumbai because of the high salinity in the soils and the heavy winds, so Under the Tree helps residents pick appropriate plants and teaches participants how to grow them. In an interview with Mrs. Babbar, she stated, “people in Mumbai are so disconnected with nature. I started Under the Tree to open people’s eyes up to something different”. An increased agricultural understanding and sense of ecological citizenship are the intended outcomes of these workshops. Babbar thinks of her organization as a success, saying that she’s seen a huge increase in demand for the workshops and that several of her past students have begun their own small gardens in the city.⁹⁰

Education efforts on urban farms in New York City tend to be more formalized, while educational goals on urban farms in Mumbai tend to be less so. Urban farmers in Mumbai often stated the importance of increased environmental awareness but did not promote urban agriculture as a method for increasing test scores or academic performance. There are no instances in Mumbai where urban gardening has been incorporated into curriculum as it has in

⁸⁹ Julius Rego (Founder of Green Souls) in discussion with the author, April 2014.

⁹⁰ Anusha Babbar (Founder of Under the Tree) in discussion with the author, April 2014.

several New York City public schools. In sum, education on community farms in Mumbai focuses more on the promotion of ecological citizenship, whereas education on urban farms in New York City focuses on specific lessons.

Food Safety

For the purpose of this study, “food safety” refers to whether or not produce available in a city is safe to eat. Food is considered “safe” if it is free of pathogens, heavy metals, chemicals, or other components that could render it unhealthy. Urban agriculture has the potential to benefit food safety in two major ways. Firstly, food produced in the city is fresher and less likely to have been contaminated in transit. Secondly, urban residents are able to see where and how their food is being produced, making them more conscious consumers. Oftentimes, this translates to a higher demand for organic and pesticide-free produce, which many urban farms provide.

Several organization leaders from both cities expressed food safety as a major goal, but the concept was far more prevalent among community farmers in Mumbai. The focus on food safety is linked to the numerous accounts of unsafe food being sold and consumed in Mumbai. Outbreaks of e-coli, dysentery, and other food borne illnesses are not uncommon. In a study done on street vended juices in Mumbai, for example, 50% of the juices sampled contained *Vibrio cholera* and all of the samples contained *E. Coli*.⁹¹ Other studies show unsafe vegetables sold throughout Mumbai are. A study published by the Journal of Food Protection found that sprouts sold in Mumbai’s vegetable markets contain unsafe levels of microbes.⁹² Additionally, several reports throughout India have shown that much of the produce sold in vegetable markets contains toxic levels of pesticide residue. These levels were considered so dangerous that the

⁹¹Durgesh Mahale, Rajana Khade, and Varsha Vaidya, “Microbial Analysis of Street Vended Juicies from Mumbai City, India” *Internet Journal of Food and Safety* 10, (2008): 31.

⁹²Saroj Sunil, “Microbiological Evaluation of Sprouts Marketed in Mumbai, India, and its Suburbs”, *Journal of Food Protection* 10, (2006): 2515.

government of India issued a suo motto proe, meaning they declared the issue as dire and in need of public attention. These studies lead many citizens of Mumbai to distrust the food that they get in the markets.⁹³

Although cited less frequently and with less emphasis, food safety is a priority of some New York City farms. With growing research about the negative effects of genetically modified crops and pesticide use, many urban consumers seek organic produce. All three commercial farms advertise their produce as natural and pesticide-free.⁹⁴ None of the urban farms in New York City visited or researched for this study used pesticides or genetically modified crops.

Food Security

The World Health Organization defines food security as existing, “when all people at all times have access to sufficient, safe, nutritious food to maintain a healthy and active life”.⁹⁵

Urban agriculture has the potential to give urban residents access to “sufficient, safe, [and] nutritious food” in several different ways. Through the use of urban agriculture, food-insecure families may have the opportunity to grow their own food, to gain employment in an urban farm, or at least to have access to affordable food produced within their community.

Several studies from around the world have shown that urban agriculture can have a positive impact on food security within an urban community. These improvements include better access to nutritious food, increased stability in food prices and a better understanding of nutrition throughout the community. A study completed by Cornell University, for example, found that

⁹³L. Devon, “Produce in India's Capital Declared Unfit for Human Consumption”, *Natural News*, (2014): 1.

⁹⁴ “About-Brooklyn Grange”, *Brooklyn Grange*, 2015, <http://brooklyngrangefarm.com/about/>., “Eagle Street Rooftop Farms: About” *Eagle Street Rooftop Farms*, 2015, <http://rooftopfarms.org/>., and “Gotham Greens: Our Produce”, *Gotham Greens*, 2015, <http://gothamgreens.com/our-produce/>.

⁹⁵ "Food Security." *WHO.int*. 2015.<<http://www.who.int/trade/glossary/story028/en/>>.

urban gardens have given Latino communities in New York City access to affordable, culturally appropriate, and nutritious food. Many of the communities studied were located in areas where quality vegetables that are an essential part of their traditional recipes are very expensive. The study found that, “by growing their own food, community gardeners were able to considerably lower their food bills”.⁹⁶ In this instance, urban agriculture benefits food security by contributing to the local food system.

Other studies have shown that urban agriculture provides a better understanding of nutrition. This understanding benefits food security by giving urbanites the ability to make healthy food choices. The University of Minnesota study mentioned above proved that participation in urban agricultural initiatives provides urbanites with nutritional knowledge. This knowledge gives urban residents have better access to healthy food and promotes food security.⁹⁷

When asked about the promotion of food security, not for profit farmers in both cities stated the difficulties of achieving this goal. When asked about how her farm contributed to food security in Mumbai, one urban farmer said, “Food security? How can you talk of food security? Did you know that there are 13 million people living in Mumbai?”.⁹⁸ Most urban farmers expressed how, ideally, with the spread of the movement, it would be possible to contribute to food security. The issue is that these farms are all relatively small-scale, and are not producing enough output to truly contribute to the local food system.

Promotion of Public Green Space:

⁹⁶Ruth Bellin and Ashlea Hunter, “Co-Constructing the Sustainable City: How Indicators Help us 'Grow' More than Just Food in Community Gardens”, *Local Environment* 16, no. 6 (2011) : 523.

⁹⁷ Ibid. 523

⁹⁸ Sabita Rajendran (Member of Green Souls Mumbai) in discussion with the author, April 2014.

One of the major benefits of urban agriculture is the provision and protection of green open space for the community to enjoy. In a congested urban environment, many residents may not have access to green areas. Gardens can serve as places for community events and outdoor socialization. Oftentimes, a garden can protect an open space from development.

Urban farmers in both locales stressed the need for green space in their community, but this sentiment was much more common among urban farmers in Mumbai. This emphasis stems from the fact that Mumbai is one of the most congested cities in the world. A study done by The Observer Research Foundation of India found that there is about 1.1 meter of land per person in Mumbai, which is one-twenty sixth of the amount of space as New York City.⁹⁹ The study also found that there was great disparity in who had access to open space. 9 million of the city's poorest residents live in areas with a population density of 200,000 per square km or more.¹⁰⁰ This means that these residents are living on .005 meters squared per person, 220 times less than the average. Only 6 percent of Mumbai's land is open public space, giving people very few spaces to gather and socialize.

In light of this research, Fresh and Local makes specific efforts to create public green space for communities that need it most. Fresh and Local has started two Pop-Up gardens, one in the SNEHA women's home in Santa Cruz, Mumbai and one in the Dongri home for girls. These gardens produce food, but the rejuvenation of a public space is the main focus. Places to gather are an important part of the designs of these gardens, as are ornamental plants such as flowers

⁹⁹ Sourav Biswas, "PLAY! Tactics and Strategies for Mumbai's Informal Cities," *Observer Research Foundation*, 2015,

http://issuu.com/skb347/docs/play_and_the_informal_city_hq_issue.

¹⁰⁰ Ibid.

that make the space pleasant to be in. While Fresh and Local sends in experienced team members to help begin the gardens, these spaces are designed by the community and for the community.¹⁰¹

Although the extreme lack of access to green space in Mumbai makes public green space preservation a larger focus, urban farmers in New York City did emphasize its importance. One urban farmer, Sharon Sockwell, stated that the preservation of community green space was the most important goal of the Phoenix Street Community Garden.¹⁰² Karen Washington, another community gardener, stated the importance of having something beautiful in her low-income neighborhood.¹⁰³ Although there is a lot of green space in New York City as a whole, certain neighborhoods may not have access to this space. Because community gardens serve a specific neighborhood, green space rejuvenation may be an important goal for these spaces.

Environmental Goals

Urban agriculture has the potential to improve and protect environmental quality. Urban farms can reduce food miles, sustainably manage waste, absorb storm water, and act as a carbon sink. Urban farms in both Mumbai and New York City list environmentalism as one of their major goals. For many urban agricultural organizations, environmental protection is the primary goal. The two movements differ, however, in which environmental goals they pursue. Urban farms in Mumbai tend to focus on waste management, while urban farms in New York City focus on carbon sequestration, storm water absorption, and the reduction of food miles. Each of these goals will be addressed separately in the following sections.

¹⁰¹ Adrienne Thadani (Founder of Fresh and Local) in discussion with the author, April 2014.

¹⁰² Sharon Sockwell (Member of Phoenix Street Community Garden) in discussion with the author, January 2015.

¹⁰³ Karen Washington (Founder of the Garden of Happiness) in discussion with the author, January 2015.

Waste Management

Urban agriculture can reduce the amount of waste produced in a city, re-use the urban waste that is generated, and recycle the remainder of the waste that is not used. Urban farms in both locales manage urban waste by composting, using recycled building material, and reducing the amount of packaging associated with food transport.

Waste management is a particular focus in Mumbai because of the inadequacy of the city's current waste management system. The Mumbai Metropolitan Municipal Region is home to 12 million people who generate 8,837 metric tons of solid waste daily.¹⁰⁴ Rapid rural-urban migration, population growth, and Mumbai's growing industrial sector all contribute to rising levels of solid waste production. In a study done for the journal *Management Research and Practice*, researchers estimated that 10,000 tons of solid waste per day will be generated in the Mumbai Municipal region by 2020 and that 12,000 metric tons of solid waste per day will be generated by 2031.¹⁰⁵ A study completed by UNESCO estimates that 15 percent of Mumbai's solid waste goes uncollected.¹⁰⁶ Untreated waste is often thrown onto streets, into bodies of water, or is simply left in heaps in vacant lots.

Mumbai's solid waste problem stems partially from the centralized structure of the city's waste management system. All three of Mumbai's functional dumpsites are located in the

¹⁰⁴"Functional Elements of SWM System in Mumbai", *Municipal Corporation of Greater Mumbai*, 2015, <http://www.mcgm.gov.in/>.

¹⁰⁵ Sanjay Rode, "Public Private Partnership in Solid Waste Management in Municipal Corporations of Mumbai Metropolitan Region," *Management Research and Practice* 3, no. 4 (2011): 23.

¹⁰⁶Pratima Pandey, "'Solid Waste Management In Mumbai, India,'" *UNESCO*, <http://www.slideshare.net/Pratimapandey/solid-waste-management-in-mumbai-india>.

northeastern suburbs of Mumbai, while population density is highest in south central Mumbai.¹⁰⁷ This means that a great deal of Mumbai's population is far from any sort of dumping grounds. Dump trucks make an average of 1,396 trips to these dumpsites per day. Growing levels of concern about Mumbai's carbon footprint as it relates to urban smog and climate change make this aspect of waste management an important one.

The Institute for Community Organization and Research in Mumbai recognized the potential benefits of decentralized waste management during their roundtable discussion titled "Citizen's group in waste management: Promoting Decentralized Waste Management". The discussion included non-governmental organizations, community based organizations, Advanced Locality Management Organizations, housing societies and local environmental experts involved in decentralized waste management efforts. The forum highlighted six case studies on decentralized waste management. The result was a reaffirmation of the need to decentralize waste collection and an understanding of what makes decentralized waste collection efforts successful. Participants stated the need for MCGM to allocate funds, manpower, and infrastructural resources to decentralized waste management.¹⁰⁸

Several participants in this study stated that they believed that urban agriculture could contribute to the decentralization of waste management in Mumbai. Of the 8,837 tones of solid waste produced daily in Mumbai, an average of 4,261 tones are biodegradable.¹⁰⁹ This means that nearly half of the waste produced in Mumbai could be processed naturally in order to lessen

¹⁰⁷ Minti Jain, "Mumbai's Solid Waste Management Plans Expensive, Dangerous," *Down to Earth*, (2007). and "Mumbai Population Density", *India Atlas Publisher*, 2014, http://www.censusindia.gov.in/maps/Town_maps/Mum_slum_pop.aspx.

¹⁰⁸ "Promoting Decentralized Waste Collection in Mumbai" *Citizen's Group on Waste Management* (2013).

¹⁰⁹ Sanjay Rode, "Public Private Partnership in Solid Waste Management in Municipal Corporations of Mumbai Metropolitan Region," *Management Research and Practice* 3, no. 4 (2011): 23.

its negative impact on the local environment and the health of urban residents. These types of waste could be processed on urban farms, which could be located throughout the city.

All urban farms visited in Mumbai participated in some form of waste re-use. Composting is the most common method of waste re-use on Mumbai's urban farms. Amrut mitti, the unique form of composting used on all of Urban Leave's farms, uses a variety of different types of urban waste. Firstly, the compost requires cow dung and cow urine, which is collected from temples. This keeps this waste off the streets of Mumbai. Amrut Mitti also calls for dry biomass in the form of dried leaves or other plant matter. This plant matter is collected from areas adjacent to the Maharashtra Nature Park and the Don Bosco School. The conventional method for dealing with this leaf litter is open burning, which pollutes the air and is a health hazard. Once the Amrut Mitti has been produced and crops are growing in the soil, additional waste can be used to ensure that the soil keeps its high nutrient content. The unusable portions of sugar cane that are left over after the plant has been juiced can be used to mulch the soil. Urban Leaves collects this waste from local juicers, keeping it out of landfills.¹¹⁰

Green Souls also participates in large-scale composting projects. Green Souls supplements their soil with large quantities of leaf litter and coconut husks because the farm is not shaded and unmulched soil loses moisture quickly. The farm also composts all wet waste produced in St. Jude's kitchens and adds it to their soil. Julius Rego estimated that the farm recycles 5,000 kgs of waste per year.¹¹¹

Urban farms in Mumbai also reuse non-biodegradable waste by using it to make garden structures. Green Souls, Urban Leaves, and Fresh and Local all use discarded objects to create infrastructure for their gardens. Green Souls, for example, collects Plastic bottles from the TATA

¹¹⁰ Preeti Patil (Founder of Urban Leaves) in discussion with the author, April 2014.

¹¹¹ Julius Rego (Founder of Green Souls) in discussion with the author, April 2014.

Hospital campus to make drippers for Green Souls’ “self-watering planters”.¹¹² The non-profit also uses plastic milk bags from the kitchens are used for seeding and old oil cans have been converted into watering containers. Urban Leave’s raised beds are made entirely out of discarded bricks. Because of these efforts, non-biodegradable waste bypasses the landfills and is managed locally.

Although not as much of a focus, several urban farmers in New York City mentioned waste reuse as a major component of their farms. On the vast majority of urban farms, composting is the preferred form of waste re-use. All organizations visited compost, but only one mentioned using recycled materials to construct their garden. This may be because waste production is not as visible of a problem in New York City as it is in Mumbai. The Department of Sanitation in New York City runs an extensive waste management program. The agency employs over 12,000 workers and has nearly 6,000 vehicles at its disposal.¹¹³ This ensures that the majority of New York City’s trash is collected and is not visible to the average citizen like it is in Mumbai.

Although solid waste is kept out of the public eye, New Yorkers do produce over three million tons of waste per year.¹¹⁴ This issue is compounded by the fact that New York City has no landfills anywhere near the city. New York City’s trash is trucked to New Jersey, Pennsylvania, and upstate New York. GrowNYC estimates that 17% of this waste is compostable, and can therefore be kept out of landfills.¹¹⁵ Recognizing this, the Department of

¹¹² Sabita Rajendran (Member of Green Souls Mumbai) in discussion with the author, April 2014.

¹¹³“About DSNY,” *Department of Sanitation New York City*, 2015, <http://www.nyc.gov/html/dsny/html/about/about.shtml#.VLfYgmTF-RQ>.

¹¹⁴“City Trash by the numbers,” *The New York Magazine*, 2013, <http://nymag.com/guides/everything/trash/trash-statistics-2013-7/>.

¹¹⁵ “GrowNYC: Compost”, *GrowNYC*, 2015, <http://www.grownyc.org/compost>.

Sanitation runs a compost project that promotes the reuse of compostable waste by running waste drop-off points, holding workshops and classes on composting in the city, providing technical assistance to community composting sites, and distributing compost to New York City gardens and parks. To supplement these programs, GrowNYC collects waste during their Greenmarkets. The Department of Sanitation and GrowNYC run nearly 50 compost drop-off sites throughout the city, which helps to decentralize New York's waste management system and to keep compostable materials out of landfills.¹¹⁶

The wide reach of these composting programs became apparent during the interviews. All farms and organizations visited were involved in some way with the Department of Sanitation's or GrowNYC's composting program. Some farms, such as the Battery Urban Farm, received kitchen scraps from these programs that added valuable nutrients to their compost. Others, such as P.S. 29, received the funding and materials needed to effectively compost from the Department of Sanitation. Through the interviews it was clear that these composting projects are widely used and contribute heavily to New York City's waste management program.

Climate Change

Another benefit of urban agriculture is its potential to combat climate change. Urban agriculture can reduce food miles by producing food closer to the people consuming it. As of 2011, 82.4% of the population of the United States lived in urban area. India's urban population was only at 31.2%, but it has been rapidly increasing with population growth and urban migration.¹¹⁷ This means that massive amounts of food must be brought into the cities. The

¹¹⁶“Neighborhood based Drop-off Sites,” *New York City Municipal Government*, 2015, http://www.nyc.gov/html/nycwasteless/html/resources/prod_serv_composting_foodwastedropoffs.shtml.

¹¹⁷ "Field Listing: Urbanization," *The CIA World Fact Book*. 2011, <https://www.cia.gov/library/publications/the-world-factbook/fields/2212.html>.

National Sustainable Agriculture Information Services estimates that the average vegetable in the United States travels 1,500 miles before reaching the table. The amount of fuel consumption associated with these food miles differs depending on the mode of transportation, but a conventional semitrailer, the most common form of food transport, uses approximately 368,102 gallons of gasoline per year.¹¹⁸ Producing food within the city localizes the urban food system, which reduces how far food needs to travel and minimizes the amount of greenhouse gas emissions associated with our food systems.

Urban farms, like all green spaces, also have the potential to alleviate the negative effects of climate change by absorbing storm water. A major impact of climate change is the increased frequency and intensity of climatic events. Because urban areas lack permeable surfaces, they are more susceptible to the flooding associated with these intense storms. The presence of urban farms and gardens increases the amount of green space within a city, and therefore the amount of permeable surfaces that can absorb excess water during storms.

Overall, climate change mitigation was a much larger focus on urban farms in New York City. Urban farmers in Mumbai were aware of the concept of climate change, but did not necessarily link their urban farming practices with its reversal. Only one farmer, Preeti Patil, stated that urban farms in Mumbai could reduce the number of trips that garbage trucks needed to take to dumping grounds, which would in turn eliminate gas emissions.¹¹⁹

Urban farmers in New York City, on the other hand, were very tuned in to the effect that urban agriculture could have on climate change. All farmers interviewed stated the reduction of

¹¹⁸Holy Hill, "Food Miles: Background and Marketing," *ATTRA*, 2008.

¹¹⁹ Preeti Patil (Founder of Urban Leaves) in discussion with the author, April 2014.

food miles as a major benefit. Educational farmers from both the Battery Urban Farm and P.S. 29 stated the importance of teaching children about food miles and localized food systems.¹²⁰

Farmers in New York also expressed the importance of storm water absorption on their farms, and several had rainwater-harvesting systems. This focus is linked with the fact that New York City has recently undergone a serious climactic event where flooding was a major issue. In 2012, Hurricane Sandy caused major flooding in New York City and called attention to the deficiencies in the city's storm water management system. The natural disaster led to a call for increased governmental support for "green infrastructure". New York City Department of Environmental Protection defines "green infrastructure" as, "An array of practices that use or mimic natural systems to manage storm runoff".¹²¹ Two types of green infrastructure, green roofs and rain barrels, are major parts of urban agriculture. This means that urban gardens can receive governmental support for these efforts. This support and the overall emphasis on storm water management throughout the city is probably the reason that so many urban farmers in New York City were tuned into how their garden relates to climate change. Mumbai's government does not emphasize green infrastructure, in part because Mumbai has not suffered a major climactic event in recent years. For this reason, urban farmers in Mumbai feel less connected to issues of climate change.

Challenges Faced: Similar Roadblocks to Resource Allocation

Throughout the last two sections, it has become apparent that there are vast differences between the two urban farming movements. Urban farming movements in New York City and

¹²⁰ Nicole Brownstien (Farm Educator at Battery Urban Farm) in discussion with the author, September 2014. and Tina Reres (Teacher at P.S. 29) in discussion with the author, January 2015.

¹²¹ "Types of Green Infrastructure," *NYC Environmental Protection*, 2015, <http://www.nyc.gov/html/dep/html/stormwater/combined_sewer_overflow_bmps.shtml>.

Mumbai have access to very different resources and are even focused on different types of goals. When the movements contain similar goals, the way that these goals play out is often very different. In this section, however, I will discuss the striking similarities in the challenges that the two movements face. Most notably, urban farmers from both movements cited challenges distributing available resources evenly throughout the entire movement. Many urban farmers felt as if they were not truly reaching communities in need. This challenge plays out in a variety of different ways. In Mumbai, farmers felt that they could either focus on environmentalism or food security, but not both. In New York City, educators spoke about the difficulties of reaching schools in low-income areas. In both cities, community gardeners expressed the difficulty of fostering gardens in poorer neighborhoods. Specific examples of this challenge will be discussed in more detail in this section.

Balancing Food Security with Food Safety and Environmental Quality on Mumbai's Urban Farms

Urban farmers in Mumbai face difficulties achieving food security without compromising food safety or environmental quality. Urban agricultural initiatives studied in this paper either focused on food security *or* environmental quality, but not on both. Railway farmers are focused on meeting their own food needs and not on the environment or on the safety of the food they are producing. These farmers use pesticides, fertilizers, and wastewater even though many railway farmers have expressed knowledge of the harmful effects of each.¹²² The focus of these farms is on output, making fertilizers and pesticides that ensure a faster growing time and wastewater that minimizes cost very appealing.

¹²²Jose Vazhacharickal, Martina Predotova, Dornadula Chandrasekharam, Sharat Bhowmik, and Andreas Buekert, "Urban and Peri-Urban Agricultural Production Along Railway Tracks: A Case Study from the Mumbai Metropolitan Region" *Journal of Agriculture and Rural Development in the Tropics and Subtropics* 114, no. 3, (2013).

Vazcharikal's study on railway farms shows that this focus on efficiency comes with a price. Vazcharikal found that the majority of vegetables produced on railway farms contained unsafe levels of heavy metals. Concentrations of Pb and Cd that far exceeded safety standards were found in spinach, green amaranth, white radish leaves, and radish root.¹²³ These vegetables are often sold on the street or to large vegetable markets, where the majority of Mumbai's residents get their produce. In his discussion, Vazcharikal points to the main problem: "The presence of Pb and Cd in plant material may in the long term create health hazards for the consumers".¹²⁴ Ultimately, farming practices along railway tracks in Mumbai could be dangerous to resident's health, making their farming practices unacceptable. It should also be noted that railway farms use large quantities of pesticides, which has been linked to health problems in consumers.

Conversely, urban farms that did focus on food safety and environmental sustainability did little to ensure food security. The table below shows the estimated output for several of Mumbai's urban farms (Table 1). Looking at the table, it is clear that Railway Farmers have a very different relationship with food security than their counterparts in not-for profit gardens. Nanda Kumar, a researcher that works closely with railway farmers, stated that the average railway farm produces 5,000 kgs per year. This translates to 96 kgs weekly, which is significantly more output than on Mumbai's community farms, which average a little over 10 kgs per week. All farmers included in Vazhacharickal's study relied solely on agriculture along the railroad tracks as a means of income.¹²⁵ This means that these farmers cannot afford to adopt

¹²³Ibid. 151.

¹²⁴ Ibid 155.

¹²⁵ Ibid. 45.

the farming practices used on the community farms because the output would not nearly be enough for survival.

This dichotomy stems from an imbalance in the resources available on these two types of farms. Railway farmers typically qualify as Below Poverty Line, and therefore cannot afford many of the luxuries that the predominantly upper-middle class not-for-profit farmers can. These socioeconomic differences translate to differences in access to resources such as water, soil, and funds. One of the biggest differences between Mumbai's railway farms and not-for-profit farms is access to clean water. All not-for-profit farms visited for this study had direct access to a clean water source. Railway farmers, however, do not have access to reliable water sources and are forced to use wastewater from the slum areas that surround the railway tracks.¹²⁶ The use of wastewater has been linked to the production of unsafe food. Therefore, socioeconomic differences between these two groups of urban farmers make it impossible for them to address the same goals.

¹²⁶ Nanda Kumar (Independent Railway Farm Researcher) in discussion with the author, April 2014.

Table 1. Produce output on Mumbai’s Urban Farms and Gardens

Farm	Area (sq. meters)	produce output (kgs per week)
The Table	457	20
Green Souls	9,957	20
MBPT	914	4
Urban Leave's Community Farms	2,743	6
Railway Farms	NA	96

Note: Data collected by author through interviews with urban farm leaders.¹²⁷

Differences in Access to Urban Agriculture in an Educational Setting

Teachers, parents involved in school gardens, and staff members from support organizations all discussed the challenges they faced when attempting to set up garden programs in schools in lower-income neighborhoods. Additionally, non-profit educational farmers described difficulties reaching schools in poorer neighborhoods. These challenges were linked to parent involvement, curriculum and testing standards, and the resources available in a given school.

On educational farms, leaders expressed difficulties getting school groups from lower-income neighborhoods to attend workshops and classes. Nick Storrs from the Randall’s Island Urban Farm stated that this issue was the biggest obstacle that his garden has faced. The space is an educational garden focused on promoting healthy eating habits among New York City’s children. But Storrs stated that the children that need it the most, whose neighborhoods are food-insecure and whose nutritional understanding is lowest, are not able to attend his classes. This is

¹²⁷ Adrienne Thadani (Founder of Fresh and Local) in discussion with the author, April 2014., Julius Rego (Founder of Green Souls) in discussion with the author, April 2014., Preeti Patil (Founder of Urban Leaves) in discussion with the author, April 2014., and Nanda Kumar (Independent Railway Farm Researcher) in discussion with the author, April 2014.

because these same children are usually in schools with very little resources. Additionally, schools in lower-income neighborhoods struggle to keep test scores up, leaving little time for extracurricular activities. This means that there are neither resources available nor time in the schedule to take classes on field trips to an urban farm.¹²⁸

Other urban farmers spoke about the difficulties in setting up school gardens in schools in lower-income neighborhoods. Tina Teres, founder of the school garden in PS 29 Brooklyn, spoke about how her garden would not have succeeded without massive amounts of administrative and parental support. Her garden is successful, but she realizes that this is not necessarily the norm. When asked about challenges, she stated, “One of the things that helped us a lot was parent support, and you do need a lot of parent support, and support from the administration. So I wouldn’t say that that was a challenge, because we had those things, but it could be a major challenge”. Not all schools have the same resources, and schools in lower income neighborhoods are less likely to have the finances or people to spare to support a garden.¹²⁹ Aliana Larson, a parent from PS 139 in Brooklyn who attempted to start a school garden only to be thwarted by rats, spoke about the difficulties that many schools face when they lack either the monetary or people resources necessary to properly run a garden. Larson states:

The thing about school gardens is you need teachers who know both about how to teach, and how to garden. But I think you rarely find both. And the teachers don't have time to learn how to garden. Then you have low-income schools who can't afford to have a specialist come in to teach. So you rely on parents who know gardening but don't know how to teach.¹³⁰

In this statement, Larson touches on both the monetary and people resources that a school garden needs to succeed. Ideally, a school garden would have the support of passionate parents,

¹²⁸Nick Storrs (Head Manager, Randall’s Island Urban Farm) in discussion with the author, September 2014.

¹²⁹Tina Reres (Teacher at P.S. 29) in discussion with the author, January 2015.

¹³⁰Aliana Larson (Parent, PS 139) in discussion with the author, October 2014.

knowledgeable teachers, and an expert gardener, but this is rarely the case. In lower-income areas where school budgets are tight and teachers are spread thin, this scenario is even less likely.

Socioeconomic Tensions Within New York City's Community Gardening Community

Resource imbalances are also evident throughout New York City's community gardens. As discussed in the previous chapter, the community gardening movement in New York City began as a way to rejuvenate low-income neighborhoods. Karen Washington, who has been gardening in the Bronx since 1985, refers to herself and her fellow community gardeners from that time as the "people in the trenches". She uses this term to express the fact that they were the people who really started the movement and cleared the way for others to come. Washington and other community gardeners have been fighting for the rights to their lots since the housing market started to pick up in the 1990's. Washington spoke about Mayor Guliani's attempt to auction off vacant lot gardens to developers in 1998. She stated that this was when community gardens first formed a coalition, but it was also when she first saw discrepancies between gardens in lower versus higher income areas. About 100 gardens were saved because of the coalition, but many gardens were lost. At this time, Washington found that gardens in lower-income areas were more vulnerable than their counterparts in higher-income areas. She stated:

Of course [gardens in low-income communities] were more at risk, because they lack the resources that a lot of wealthy neighborhoods have. These wealthy neighborhoods tend to be more vocal, more organized, and I'm not saying lower-income neighborhoods are not like that, but a lot of it boils down to who you know, let's face it, who you know at the top.

In this statement, Washington is saying that she feels that vacant lot gardens were, and still are, more vulnerable in lower-income neighborhoods because residents lack the connections and the voice to fight land developers.

Today, Washington worries that the voices of community gardeners in low-income neighborhoods are still not being incorporated into the urban agriculture movement. She feels as if most of the media attention, and therefore a lot of the funding, is going to rooftop gardens or gardens that use higher-tech agricultural methods such as aquaponics and hydroponics.

Washington speaks about the dangers of this focus, stating:

When people talk about urban agriculture they tend to talk about rooftop gardens, vertical gardens, and tend to dismiss community gardens. And I've got to watch that with a close eye because rooftop garden is affluence, because a rooftop retrofit is a lot of money, [and so is] doing aquaponics or hydroponics on a large scale... So we have to be careful that the people that have been doing community gardening for a long time, the people in the trenches, are not pushed to the side all of the sudden.

During our meeting, Washington gave a few examples of how her movement has been “pushed to the side”. She spoke about a segment in the New York Times magazine called “The Face of Urban Agriculture” that featured no Latino urban farmers. She also mentioned an instance of a government-funded garden that was supposed to be for community use being split in half so that part of the space could produce food for an upscale restaurant. Washington stated that a lot of the time, urban gardeners of all socioeconomic statuses can and do work together, but that she is weary of this new wave of what she calls “glorified” urban agriculture. She believes that there is room for all sorts of urban agriculture in New York City, but that she is concerned that community gardens, especially those in low-income neighborhoods, will be forgotten. This concern is even more relevant because gardens in lower-income neighborhoods have historically needed to fight much harder for their spaces and are in greater need of assistance, funding, and

aide. If this new wave of urban agriculture was to shadow community gardening, these long-standing areas of community enrichment may be at risk.¹³¹

Conclusion

Throughout this chapter, it became clear that there is a great deal of variation both between Mumbai's and New York City's urban agriculture movements and within each urban farming community. Between the two movements, the differences are mainly resource-based. In Mumbai, urban gardens have access to a very limited body of monetary, governmental, non-profit, and people resources. In New York City, urban farms and gardens benefit from a variety of different governmental programs, an extensive non-profit network, and an enthusiastic volunteer base. These resource differences translate to a much larger movement in New York City and a fairly limited movement in Mumbai. Within each movement, urban farmers and gardeners focus on a wide variety of goals. A given urban farm or garden could be focused on education, food security, food safety, environmentalism, or a combination of these values. Oftentimes, the goals of one urban farm or garden will not align with those of another.

Despite this variation, a few major themes repeatedly surfaced both in the literature and the interviews. Urban farmers in both cities expressed goals that were related to alleviating poor conditions in low-income and minority areas. Food insecurity, unsafe food, lack of green space access, poor waste management, and low levels of nutritional understanding are all issues that are especially relevant in low-income areas. Urban agriculture cannot truly address these issues without reaching communities where these problems are most prevalent. Yet urban farmers in both locales expressed the feeling that they were not truly reaching the neighborhoods or the people who needed them most. In some cases, urban farmers from low-income neighborhoods

¹³¹ Karen Washington (Founder of the Garden of Happiness) in discussion with the author, January 2015.

felt as if they were being pushed aside. In others, the resource gap was so great that low-income farmers made up an entirely different movement, with different methods and goals.

In both cities, there are organizations that attempt to address these disparities. In Mumbai, Fresh and Local holds urban agriculture workshops in slum areas. In New York City, GrowNYC, GreenThumb, and several other governmental and non-profit organizations focus on promoting urban agriculture in areas of need. It is clear that, despite the best efforts of many urban farmers, this resource disparity is still felt throughout the urban farming community. In the next chapter, I will explore why these two extremely different movements face such a similar challenge.

Analysis

Using Social Movement Theory to Explain Resource Distribution Challenges Within Urban Gardens

Throughout the last chapter, it became apparent that urban agriculture looks very different in Mumbai and New York City. Despite this, both cities' urban farming movements face challenges in resource distribution. Urban farmers in both locales expressed social goals that relate to urban revitalization, but participants from both cities felt as though they were not reaching the people who truly needed their help. In Mumbai, urban farmers felt as if they could either combat environmental goals or food security issues, but not both. In New York City, educational farmers spoke about the difficulties of reaching lower-income schools and community gardeners expressed the challenges of running gardens in low-income neighborhoods. The two movements have access to very different types of resources and even focus on different goals, but this challenge was brought up over and over again in both locales.

The answer to this puzzle may seem straightforward. The simplest conclusion to make is that wealthier neighborhoods, schools, and individuals have more interest in urban gardening than their counterparts in low-income areas. Following this logic, wealthier areas would be more likely to host urban gardens, while neighborhoods that have space for urban gardens would attract wealthier people. This image of the urban garden as a space targeted toward and run by wealthy young people is common in popular media. The *New Yorker*, *National Geographic*, *Grist*, and several other widely read news sources criticize urban agriculture as a source of gentrification. The *New Yorker* article, "Gentrification and the Urban Garden", lumped urban gardens in with gourmet cupcake shops and upscale bars as reasons why low-income and

minority communities are being pushed out of their neighborhoods.¹³² Grist and *The Atlantic* equated urban gardens to luxury lofts in low-income areas.¹³³ An article titled “The Crooked Path From Farm to Fork” in *Conservation Magazine* begins with the statement: “The cultural—and agricultural—quest to reclaim and reform the food system appeals primarily to relatively privileged, mostly white urbanites”.¹³⁴ The claim that urban gardens contribute to gentrification without any real benefits to long-standing communities is the strongest and most common criticism of the movement.

Although the gentrification argument may be the most obvious answer to the questions that this paper raises about resource disparities within the two movements, the research does not point to this conclusion. Urban farmers in both New York City and Mumbai are economically diverse. As discussed in the last chapter, most of these farmers emphasized social goals that are particularly pertinent in low-income areas. Further, urban farming organizations in both locales worked to support lower-income communities, regardless of the neighborhood in which they were based. Even commercial gardens in New York City, which grow high-end produce consumed primarily by the upper class, include programs that serve low-income communities.

Additionally, community gardeners in both locales worked directly with surrounding neighborhoods. Most community garden leaders had lived in an area for years if not decades. These gardeners worked to make improvements in the existing community, not to displace long-time residents. Areas surrounding the Phoenix Street Community Garden and the Garden of

¹³²Lauren Markham, “Gentrification and the Urban Garden,” *The New Yorker*, May 2014.

¹³³Patrick Crouch, “Evolution or Gentrification: Do Urban Farms Lead to Higher Rents?” *Grist*, 2012. and Conor Friedersdorf, “How Urban Farming is Making San Francisco's Housing Crisis Worse,” *The Atlantic*, September 2014.

¹³⁴James McWilliams, “The Crooked Path from Farm to Fork,” *Conservation Magazine*, September 2013.

Happiness in New York City still contain low-income housing. In Mumbai, there are nowhere near enough urban gardens to pose a threat to housing. The argument that urban agriculture is a concept that only appeals to exclusively to privileged urbanites is even less relevant in Mumbai where the bulk of urban farms are run by BPL migrants living in informal settlements along the railway tracks.

The realities of both urban farming movements show us that these disparities do not stem from lack of interest from lower income communities. It is also clear that the imbalances within the two movements do not stem from apathy on the part of successful urban farms or established urban farming organizations. Gentrification may be an eye-catching concept, but it neither explains our puzzle nor does it fully describe the complexities of either urban agriculture movement.

So what are the drivers behind disparities in resource access within the two movements? As urban agriculture in both cities is a complex phenomenon with a variety of different stakeholders and a wide range of goals, the answer will necessarily be more complex. This chapter will use four social movement theories to explore this puzzle. The first section will utilize resource mobilization theory to explore the difficulties the movement's face in acquiring and distributing resources. The second section will use new social movement theory to conceptualize the ideological drivers behind the disparity. Next, I will make use of ideologically structured action theory to investigate how different urban farms are framing and promoting urban agriculture as a concept. Lastly, political opportunity structure will be utilized to analyze the role that governmental opportunities plays in each movement. The end result will be a deeper understanding of the array of factors that affect resource distribution and network formation in the two urban agriculture movements.

Resource Mobilization Theory

Resource mobilization theory deals with the resources available to a movement and the ability of organizations involved in that movement to make use of those resources. According to McCarthy and Zald, the founders of the theory, the approach questions, “the close link between the frustrations and grievances of a collectivity of actors and the growth and decline of movement activity”.¹³⁵ In other words, the success of a movement does not necessarily correlate with the ideologies of its constituents or the degree to which they believe in their cause. McCarthy and Zald urge us to consider the more concrete drivers behind social movements. When resources such as money, land, and experienced individuals are available, movements are more likely to form and thrive.

This theory explains why the urban farming movement in New York City has a larger size and scope than the movement in Mumbai. As discussed in the previous chapter, urban farms and gardens in New York City have access to a variety of monetary, material, and people resources that farms and gardens in Mumbai do not. What is not clear, however, is why urban farmers in New York City still fall short of reaching communities in need. Logically, an increase in available resources should lead to a greater ability for a movement to distribute resources. Because urban farmers in New York City have access to such a large variety of different resources, the movement should be highly successful at achieving its goals, many of which include reaching low-income populations. As discussed in the previous chapter, however, this is not the case. In some regards, low-income urban gardeners in Mumbai are better off than their counterparts in New York City. In Mumbai, BPL farmers along the railway tracks at least have

¹³⁵John MacCarthy and Mayer Zald, “Resource Mobilization and Social Movements: A Partial Theory,” *Chicago Journals* 82, no. 6 (1977): 1212.

consistent access to land. This is not the case in New York City, where developers or other companies often shut down community gardens in low-income neighborhoods. Clearly, resource availability is not dictating resource distribution in these two movements.

Olson's "free-rider" theory provides a possible solution to this problem. Mancur Olson, economist and social theorist, states that rational actors will not necessarily pursue public goals because they could benefit from the results of public action without putting in the work and resources that go into collective action. Following this logic, social movements fall short of their goals when too many people think this way and too few people are inspired to act.¹³⁶ Applied to the urban agriculture movements, this theory would mean that successful urban farmers, i.e. urban farmers that have enough resources to stay afloat, would not be driven to act on behalf of the movement as a whole.

A closer look at the urban agriculture movements in the two cities, however, shows us that this is not the case. Urban farmers in both locales that could make a living and support their efforts without any real changes in policy or resource distribution are constantly giving time, money, and resources to the larger movement. In Mumbai, Fresh and Local supports its small staff and farm from a handful of for-profit endeavors associated with restaurants, caterers, and wealthy communities. Theoretically, Fresh and Local could keep the profit from these endeavors as revenue, but instead the organization re-invests this money in pro-bono projects such as farming workshops in slum areas and their pop-up gardens in low-income housing projects. According to their website, their mission is to, "raise awareness about the possibilities of urban

¹³⁶Steven Buechler, "Resource Mobilization Approaches," in *Understanding Social Movements: Theories from the Classical Era to Present*, (London, UK: Paradigm Publishers, 2011), 112.

farming by making it easy accessible to all”.¹³⁷ In other words, Fresh and Local wants to move beyond their own projects and promote the movement as a whole.

Although not necessarily profitable or necessary for Fresh and Local’s survival, one may expect the promotion of outside projects in such an organization because its goals are not production-oriented. More surprising, however, are the social initiatives that commercial farms have taken on. By definition, commercial farms are businesses that have to focus on production, sales, and profits. In New York City, these commercial farms are consistently turning a profit and are therefore meeting their basic goals. Two out of the three major commercial farms in New York City, however, provide support for outside organizations that focus on the promotion of the movement as a whole. The Brooklyn Grange, for example, partners with City Growers, a non-profit that runs educational programs on the Brooklyn Grange’s rooftop farm. The Brooklyn Grange also partners with the Refugee and Immigrant Fund to train and employ refugees from around the globe.¹³⁸ Eagle Street Rooftop Farm also engages in programs outside of their for-profit farm. Like the Brooklyn Grange, Eagle Street Rooftop Farm partners with City Growers. Additionally, the farm runs a community composting site and host free lectures for people from the neighborhood. These efforts take time and money from these businesses, and subtract from their bottom line.¹³⁹ Therefore, it is clear that these organizations are willing to make sacrifices for public goals.

If it is not the “free-rider” paradox that is preventing adequate resource distribution within these urban agriculture movements, then what is fueling these divides within the urban agriculture movements? Since this phenomenon clearly does not stem from apathy on the part of

¹³⁷“Fresh & Local: Farm the City”, *Fresh and Local*, 2014, <http://freshandlocal.bertha.me/>.

¹³⁸ “About-Brooklyn Grange”, *Brooklyn Grange*, 2015, <http://brooklyngrangefarm.com/about/>.

¹³⁹ “Eagle Street Rooftop Farms: About”, *Eagle Street Rooftop Farms*, 2015, <http://rooftopfarms.org/>.

wealthier gardeners, I propose a different answer. I believe that the two movement's inability to reach target communities stems from the fact that urban agriculture movements require a massive amount of resources. Traditional social movements rely on even distribution of resources throughout the different social movement organizations involved. Urban agriculture movements, however, are not traditional social movements in that they rely on the ability of individual spaces to produce material goods. Before any social or environmental changes can occur, gardens first need to have the resources to grow food.

All gardens require land, dirt, seeds, lumber, fencing, and much more in order to simply exist, not to mention the resources needed to promote environmental or social goals. An average raised bed measures 4X8X10 inches, and requires nearly one ton of soil to fill.¹⁴⁰ Additionally, gardens require a constant source of clean water. This is a particularly difficult problem in Mumbai, where many neighborhoods do not have access to clean water. If a garden wishes to pursue environmental goals, additional infrastructure such as compost bins or rain barrels are necessary. Social goals require outdoor classroom space, soil testing, and people with the time to run programs. The resources required to run an urban farm are far more extensive than the resources needed for more traditional social movements. Oftentimes, social movements could benefit from additional resources but can survive without them. Traditional movements may be better off with meeting space, a large budget for mailings and events, and strong political connections, but they are able to get by without all of these resources. Urban agriculture movements, however, cannot get by without the many resources that are necessary to support a network of gardens.

¹⁴⁰Nevin Cohen, Kristin Reynolds, and Rupal Sanghvi. *Five Borough Farm: Seeding the Future of Urban Agriculture in New York City*, ed. Jerome Chou. (USA: USA Print Craft, 2012), 38.

For-profit farms and other successful urban farms need an incredible amount of resources both to start up and to remain afloat, and they do not often much money left over. Fresh and Local's Flyover Farm, its flagship project, raised 5,500 dollars from Kickstarter before it could get started.¹⁴¹ The Brooklyn Grange purchased 12.1 million tons of rooflite agriculture-grade topsoil for its first farm.¹⁴² Eagle Street Rooftop farm estimates that their farm took about 10\$ a square foot to build, putting their construction costs at 600,000 dollars.¹⁴³

Once built, these organizations are attempting to support themselves by selling food, just like any other commercial farm. On top of all the normal challenges that traditional rural farms face, commercial farms have to pay for high leases, expensive rooftop retrofits, and pricey permits. These farms also have the added pressure of being in close proximity to their customers, meaning that their production methods are held to higher standards. Part of the mission of these urban farms, and part of the reason why donors will give them money, is to promote a sustainable food system within the two cities. This means that they must adhere to natural if not organic farming practices. These practices require a greater amount of labor and produce lower yields, further adding to production costs. Lastly, urban farms are necessarily small because they need to fit on top of rooftops or in the little open space left on the ground. A one-acre farm that would be considered small in a rural setting is thought of as giant in an urban one. Smaller farms are inherently less profitable because production is so much lower. The combination of high leases, sustainable farming practices, and small-scale farming limits profits and makes supporting an urban farm more difficult than running a rural one.

¹⁴¹"Fresh & Local: Farm the City", *Fresh and Local*, 2014, <http://freshandlocal.bertha.me/>.

¹⁴² "About-Brooklyn Grange", *Brooklyn Grange*, 2015, <http://brooklyngrangefarm.com/about/>.

¹⁴³"Eagle Street Rooftop Farms: About", *Eagle Street Rooftop Farms*, 2015, <http://rooftopfarms.org/>.

When we look at the vast amounts of resources that it takes to run a successful commercial farm in an urban setting, it is impressive that these farms run social programming at all. We would never expect a small organic rural farm to work to give precious time and resources to other farms. Yes, resource distribution and network formation is essential to a social movement, but for many small farmers there are simply not enough hours in the day. After looking at the costs of urban farming it seems more likely that lack of resources rather than apathy on the part of wealthier farms is the culprit behind resource inequalities within the two urban farming movements.

New Social Movement Theory

New social movement theory explores movements in post-industrial societies. According to Claus Offe, one of the founders of the theory, modern social movements arose from the realization that governments and other traditional bureaucratic actors cannot adequately address the complex problems of modern-day society. These movements are not within private or public spheres, but rather occupy what Offe calls the “non-institutional political sphere”.¹⁴⁴ This means that the movements use legally legitimate means to benefit the entire community.

The urban agriculture movement in both locales falls squarely under this definition of new social movements. Urban farming organizations in both cities arose from a perceived gap between what the city needed and what its government could provide. In Mumbai, urban gardens combat food insecurity and waste management because the traditional institutions responsible for these issues were inadequate. In New York City, urban farmers seek to produce a sustainable food system and to insure access to public green space, services that neither the municipal

¹⁴⁴Claus Offe, “New social movements: Challenging the Boundaries of Institutional Politics,” *Social Research* 52 no. 9 (1985): 826.

government nor traditional institutional farms were providing. In both cases, urban gardening, a perfectly legal activity, is used to benefit the greater community, fitting Offe's definition of a new social movement.

Offe also speaks about the informal nature of new social movements. Because these movements represent a reaction to the inadequacies of more traditional actors, they are resistant to taking on a formalized structure that resembles the institutions that have failed them.¹⁴⁵ This is certainly the case within both urban agriculture movements. Urban agriculture in both locales consists of a loose network of gardens and farms in geographically distinct areas of the city. Organizations such as Grow NYC, Fresh and Local, and the American Association of Community Gardens bring urban farmers together for discussion and, occasionally, resource sharing, but urban agriculture organizations usually work alone. Urban farms and gardens generally function in their corner of the city and focus on improving their own neighborhoods.

Offe goes on to explain how this lack of organization leaves room for a variety of different values within a given social movement. Typically, new social movements are single-issue based, but the values that drive the individual organizations involved can vary significantly.¹⁴⁶ Throughout the last chapter, we explored the ways that this concept applies to the urban agriculture movements in Mumbai and New York City. Although all farms and gardens within the two cities all strive to promote urban agriculture, the reasons behind their actions vary significantly.

In his article, Offe also explores how new social movement organizations will not, and often times cannot, compromise on their core values. Offe states, "Social movements relate to other political actors not in terms of negotiations, compromise [or] reform... but, rather, in terms

¹⁴⁵ Ibid. 830.

¹⁴⁶ Ibid. 830.

of sharp antinomies such as yes/no, them/us, the desirable and the intolerable, the victory and defeat, now or never ect.”¹⁴⁷ Offe explains how new social movements stick firmly to their beliefs because they have very little to negotiate with. Because of the lack of organization and structure, new social movement organizations rarely have much to offer in return for their demands being met. Instead, they frame their issues and the values from which they stem as non-negotiable.

Although Offe only discusses the ways that the uncompromising nature of new social movement organizations affects the way that they interact with outside actors, I believe that this concept can also be used to explore the ways that organizations within a movement interact with one another. If new social movements leave room for different values while social movement organizations within a given movement refuse to compromise on these values, then it follows that tension may arise within a the movement. Throughout the remainder of this section, I will explore the degree to which this theory can explain the resource distribution issues we see in the two urban agriculture movements.

An examination of the values behind different farms and gardens in Mumbai unearths contradictions and possible points of tension between organizations. Firstly, let us revisit the core values of different organizations. Typically, urban agriculture organizations within Mumbai fall into one of two goal categories. Community farms and nonprofit organizations such as Urban Leaves and Green Souls generally strive to promote food safety, waste minimization, and the promotion of a sustainable food system. Railway farms, on the other hand, strive to address their own food insecurity. These farmers are typically BPL and farm in the city in order to support their families.

¹⁴⁷Ibid. 830.

At first, the values of these two groups do not seem to be in opposition. A closer look at the methods employed by railway farmers, however, reveals a potential point of contention. Because railway farmers are so resource-poor and rely so heavily on the productivity of their farms for survival, they employ any and all methods necessary to grow as much food as possible. This includes fertilizer, pesticide, and wastewater use.¹⁴⁸ As discussed in the previous chapter, these practices have been linked to unsafe food production.¹⁴⁹ The production of unsafe food goes directly against everything that nonprofit community farmers stand for. Preeti Patil, the founder of Urban Leaves, believed that abandoning chemical agriculture was such an important part of her mission that she did not consider urban farmers that used chemicals as part of the same movement as her organization.¹⁵⁰ Although less of an extreme reaction, Julius Regor, the founder of Green Souls, stated that he believed the use of locally-sourced natural farming mediums was an essential part of what he was doing.¹⁵¹ It is clear that the use of pesticides and fertilizers on railway farms has the potential to be a point of conflict within the movement.

In order to fully understand the intense opposition to chemical agriculture amongst nonprofit community farmers in Mumbai, we have to remember that their viewpoints are shaped by decades of abuse from industrial agricultural companies. The rise of chemical farming in India resulted in the loss of arable land, the loss of autonomy for farmers, and, most importantly, the production of toxic food. Industrial agriculture has taken such a strong hold on the country that nonprofit community farmers in Mumbai that strive to promote safe and sustainably-produced

¹⁴⁸Nanda Kumar (Independent Railway Farm Researcher) in discussion with the author, April 2014.

¹⁴⁹Jose Vazhacharickal, Martina Predotova, Dornadula Chandrasekharam, Sharat Bhowmik, and Andreas Buekert, "Urban and Peri-Urban Agricultural Production Along Railway Tracks: A Case Study from the Mumbai Metropolitan Region" *Journal of Agriculture and Rural Development in the Tropics and Subtropics* 114, no. 3, (2013): 145.

¹⁵⁰Preeti Patil (Founder of Urban Leaves) in discussion with the author, April 2014.

¹⁵¹Julius Rego (Founder of Green Souls) in discussion with the author, April 2014.

food need to be firm in their beliefs and values. This leaves little room for compromise, which creates rifts within the movement.

This relationship is complicated further by the negative press that railway farmers regularly receive. Recently, the press surrounding railway farms has not been all that positive. Headlines read: “Vegetables grown along railway tracks highly toxic”, “Resident questions the safety of Mumbai’s urban railway farms”, and “Notice issued to center, toxic vegetables grown on farms along railway tracks”.¹⁵² If Mumbai’s community gardening organizations are striving to promote urban farming throughout the city, the logical thing to do would be to point out the ways that they differ from these farms. If Mumbai’s community farms were to be lumped in with railway farms, they would be associated with the production of toxic vegetables. Further, residents of Mumbai may be dissuaded from growing their own food because they believe that the food grown in their city is toxic. This association would directly counter everything that Mumbai’s community farmers strive to do. These farmers promote urban agriculture as a way to ensure that your food is produced without harmful chemicals, and the link between railway farmers and unsafe food undermines that claim. Therefore, it may be in community farmers’ best interests to distance themselves from railway farms.

On the other side of the divide, railway farmers have just as much of a reason to reject community gardener’s ideologies and values. Railway farmers farm the city as a form of subsistence. They need to squeeze every ounce of productivity out of their tiny strips of poor

¹⁵²Vijay Singh, “Vegetables grown along railway tracks highly toxic: PIL” *The Times of India*, 2015, <http://timesofindia.indiatimes.com/city/mumbai/Vegetables-grown-along-railway-tracks-highly-toxic-PIL/articleshow/46016080.cms>., Micheal Levenston, “Resident Questions the Safety of Mumbai’s Urban Railway Farms,” *City Farmer News*, 2011, <http://www.cityfarmer.info/2011/07/19/resident-questions-the-safety-of-mumbai%E2%80%99s-urban-railway-farms/>., and “Notice issued to Centre, Railways for Toxic Vegetables Grown on Farms Along Railway Tracks,” *Food Safety Update*, 2015.

quality soil. Therefore, they rely on the very farming methods that community farmers condemn so vehemently. As discussed in the previous chapter, Mumbai's railway farms produce much more than their counterparts on community farms. This level of production would not be possible without the fertilizers and herbicides that Mumbai's community farmer's reject. Therefore, the very values on which Mumbai's new community farming movement is based on have the potential to undermine railway farmer's livelihoods.

Like in Mumbai, there are some clear value differences between resource poor gardens and their wealthier counterparts in New York City. Community gardens, which usually have access to fewer resources, focus on community development goals such as the promotion of public green space, food security, and neighborhood rejuvenation. Commercial farms, which have access to a larger body of resources, focus on environmental goals such as promoting a sustainable food system, waste reuse, and stormwater sequestration. Unlike in Mumbai, however, these values do not directly undermine one another. In fact, the values of these different groups often overlap. Gardens associated with land conservancies and city parks, for example, typically focus on both environmental and social goals. Most community gardeners will state that they do value the environmental benefits of their garden and, as discussed in the previous section, most commercial farms run social programs in addition to environmental ones. Although there is a difference in the foundational values of the different types of urban farming in New York City, these differences are not as stark as the value differences within Mumbai's movement. The result is a much more subtle divide between resource groups within the movement. It also means that Offe's description of new social movements as value-driven entities does not adequately explain the divide within New York City's urban agriculture movement.

Although new social movement theory does not fully explain our puzzle in both locales, it does shed a great deal of light on value differences within the two movements. In Mumbai, new social movement theory provides a concrete explanation for divisions within the urban agriculture movement. In New York City, value divides are subtler, which explains why the division between different types of urban farms is less dramatic in New York City. In the next section, I will explore these differing values further with ideologically structured action theory. The insights gained from the use of new social movement theory are foundational to the section on ideologically structured action theory, which also deals with movement values.

Ideologically Structured Action

Ideologically structured action theory attempts to reconcile resource mobilization theory and new social movement theory to create a holistic understanding of modern social movements. Russell Dalton, one of the leading scholars on the theory, states that all movement organizations face challenges in acquiring resources and thus face decisions about how to overcome such challenges. The methods that these organizations choose to pursue the resources that they need are influenced by their ideologies. For example, an anti-oil movement will not pursue support from a local gas station, but a union movement may. These actions and the ideologies behind them form the social movement organization's identity. An organization's identity is analogous to how it is perceived by the public, and further limits the constituents it attracts and the sources it can pursue for funding. Greenpeace, for example, has used anti-government tactics to achieve its objectives, earning it the identity of a radical organization, which turns away some constituents and sources of funding. This relationship between ideology and resources is cyclical. The resources available to the movement impact its ideology, which, in turn impacts the resources it has access to. Following the Greenpeace example, it is difficult to tell whether the

organization is anti-government because of its ideologies or because of the tactics it was forced to use due to limited resources. Within most social movements, there is no one answer—ideologies and resources are simply intermeshed. In this section, I will explore the degree to which the intricate relationship between resources and ideologies explains the divides within the New York City's and Mumbai's urban agriculture movements.¹⁵³

A closer look at the differing values within New York City's urban agriculture movement provides a possible explanation as to why some organizations have access to a greater body of resources than others. While the differing values within the movement are not drastic enough to put organizations directly at odds with one another, they still affect the constituents and sources of funding a given organization can pursue. In this context, New York's urban agriculture organizations can be split into three goal categories. The first category consists of farms that focus first and foremost on environmental goals. Commercial farms are really the only organizations that fall squarely into this category. All the other types of urban agriculture organizations state environmental goals but also pursue social goals that may overshadow their environmental values. The second category is farms and gardens that pursue citywide social initiatives. These are the non-profit farms, and are usually associated with a land conservancy or a large public park. Organizations in this category values agricultural education, access to public green space, and nutritional awareness throughout New York City above anything else. The last category contains the gardens that promote social goals within a specific neighborhood. Community and school gardens fall under this category because both focus on a particular neighborhood.

¹⁵³Russel Dalton, *The Green Rainbow*. (New Haven, CT: Yale University Press, 1994), 10-15.

The value category that an organization falls under directly affects what resources it has access to. Whether an organization identifies primarily with social or environmental goals affects who is drawn to the organization and what sources of funding are available to it, while the scale at which an organization operates dictates the size of their resource base. These distinctions play into the resource inequalities identified in the previous chapter. In his book on social movements, Dalton speaks about how western civilizations have become more and more attuned to environmental issues in the past two decades. According to Dalton, this attitude began as a response to crisis—major oil spills or nuclear plant disasters led to a brief uptick in concern for the environment. Over time, however, environmentalism has made its way into the political agenda of nearly all Western democracies.¹⁵⁴ Environmentalism appeals to a wide variety of people because everyone takes part in and is affected by environmental quality.

As discussed in the previous chapter, the feeling that environmental issues are crises is still prevalent in New York City. This means that organizations that identify with environmental issues have access to a wide resource base. On the one hand, a wide variety of individuals, corporations, and nonprofits are likely to give directly to organizations that align themselves with environmental issues. On the other, the media is more likely to pick up on stories about organizations that market themselves as environmental stewards because environmentalism is such a popular topic. This means that commercial farms, which align themselves most heavily with environmental issues, have access to a huge body of resources that organizations that identify primarily with social issues do not.

Non-profit farms are also likely to attract media attention because their goals are so far-reaching. Although most non-profit farms focus primarily on social goals, these organizations are

¹⁵⁴Ibid. 53.

charged with serving the entire city. The work of these nonprofit farms is more likely to be relevant with a larger body of people, attracting media and funding resources.

The last category of urban agriculture organizations, school and community gardens, have the unfortunate disadvantage of being both socially-oriented and locally-focused. This means that they do not have access to the same breadth of resources as the two other categories. Because these organizations do not identify heavily with environmental issues, they do not tap into the far-reaching environmental sentiments described above. These organizations also identify primarily with a single neighborhood, which further limits the resources they have access too. Even if an individual really cares about community development, local food security, or any of the other values articulated by community and school gardens, they will not be likely to provide their time or resources to a garden outside of their own neighborhood. This leads to inequalities among school and community gardens, with gardens in wealthier neighborhood more likely to succeed than their counterparts in low-income areas. Gardens in neighborhoods that do not have adequate resources to support them must seek governmental or non-profit aide, which can be less reliable. When viewed in this way, it is clear that the differing values of urban agriculture organizations in New York City lead to resource inequalities within the movement.

In developing countries, many people assume that society will have a very different relationship to environmental issues. The theory goes that, because these societies are still attempting to meet their basic needs, the vast majority of the population will be uninterested in environmentalism. According to this line of thinking, environmental issues will only concern the social and economic elite in developing nations.¹⁵⁵ At first glance, this line of thinking seems explain the disparities between railway farmers and community gardeners in Mumbai. Mumbai's

¹⁵⁵ Philip Elmer-Dewitt, "Rich vs. Poor: Summit to Save the Earth," *Time*, 1992.

community gardens identify with environmental issues while railway farmers do not, and the city's community gardeners are primarily middle or upper class while railway farmers are largely BPL.

While this relationship between class and environmental ethics probably plays a part in Mumbai's urban farming communities, I do not think that it adequately describes the relationship between ideology and resources within the movement. Community gardens in Mumbai are rooted in environmental values, but the types of environmental goals that they pursue are also livelihood issues. Inadequate waste management and unsafe food are problems that all residents of Mumbai face, especially lower-class people. These organizations are not identifying themselves with traditional environmental issues such as climate change that have little to no resonance with the average citizen of Mumbai. Instead, these organizations build their identity around emerging information about the dangers of traditional agricultural practices and the sanitation issues that residents of Mumbai have to deal with everyday.

These goals stand in stark contrast with the goals of railway farmers. Railway farmers' goals are even more localized than New York City's school and community gardens. These farmers are focused solely on food security at the family-level, which drastically limits the resources available to them. While Mumbai's community gardeners can solicit funds and resources from environmentally minded individuals, corporations, or nonprofits, railway farmers only benefit from government programs geared towards poverty alleviation. Outside corporations and nonprofits may even shy away from supporting railway farmers because of their reputation for producing unsafe vegetables. As discussed earlier, Urban Leaves' founder was very reluctant to even be associated with railway farms.¹⁵⁶ Even Fresh and Local, which

¹⁵⁶ Preeti Patil (Founder of Urban Leaves) in discussion with the author, April 2014.

focuses specifically on gardening in the slums, does not work directly with railway farmers. In our interview, Thadani stated that she was working on an initiative to try to get individuals farming the railways new plots that would not require the use of wastewater, but that vast changes needed to be made before these farms could be considered a viable method of farming.¹⁵⁷ Because railway farmers must focus on survival and not environmentalism, they have developed an identity that only attracts resources from a select group of constituents. Therefore, differing ideologies throughout Mumbai's urban agriculture movement play into resource differences within the two movements.

Political Opportunity Structure

Political Opportunity Structure explores the role that government plays in shaping a social movement. The structure emerged out of Political Process Theory, a social theory that focused on the political process behind movements. The focus of Political Opportunity Structure is on the degree to which government helps or hinders a given social movement. According to Sidney Tarrow, the founder of the concept, political entities influence social movements through their degree of openness to citizen participation as well as through direct actions that support or inhibit a movement. Additionally, Tarrow points out that the stability of political alliances directly affects movement success.¹⁵⁸ Throughout this section, I will utilize Political Opportunity Structure to explore resource inequalities throughout Mumbai's and New York City's urban agriculture movement.

The governmental resources available to each movement are outlined in detail in chapter 3. There are several aspects of New York City's government that render it open to an urban

¹⁵⁷ Adrienne Thadani (Founder of Fresh and Local) in discussion with the author, April 2014.

¹⁵⁸ Steven Buechler, "Resource Mobilization Approaches," in *Understanding Social Movements: Theories from the Classical Era to Present* (London, UK: Paradigm Publishers, 2011), 135.

agriculture movement. New York City has a strong history of promoting open space greening, which fits neatly with the concept of urban gardening. More recently, the city government has been taking on an increasing number of environmental goals that further align it with the urban agriculture movement. Mumbai's municipal government, on the other hand, has no department focused solely on the environment. The Central Railways department supports urban agriculture through their "Grow More Food" campaign, but this program is more of a source of income for the department than a social program. The absence of an environmental or parks department limits the movement's access to government, as the values of the movement do not truly align with the goals of a municipality.

Government programs surrounding urban agriculture have the potential to have an enormous impact on the ability of the two movements to reach low-income communities. On the one occasion that Mumbai's urban farmers have received governmental aid, the program directly impacted low-income communities. Without the Central Railway's Grow More Food Campaign, railway farming would not exist in Mumbai. Although not ideal, this program should definitely be viewed as a political opportunity for urban agriculture in Mumbai. The problem with the program is that there are no resources allocated to ensure that the program is successful. Mumbai's Central Railway gives families land, which is one of the most valuable resources in an urban farming movement. But the program leaves these farmers without any other options than to use harmful wastewater. The lack of support on the part of the government basically dooms the farmers to produce unsafe food, which ensures that they will be cut off from the rest of Mumbai's urban agriculture movement. Without additional support, disparities between these two types of urban farming in Mumbai will never be resolved.

In New York City, GreenThumb provides the resources, funds, and organizational support necessary to start community gardens.¹⁵⁹ Any neighborhood is eligible for these resources, and the program focuses specifically on low-income areas. Both of the community gardens visited for this project were registered with GreenThumb.¹⁶⁰ The organization also helps gardens secure leases and protect their property. Karen Washington spoke about how these services were especially important in low-income communities, where citizens may lack the knowledge or connections to fight land developers.¹⁶¹ New York City Housing Authority's "GreenNYCHA" program is also essential in distributing necessary resources to low-income gardens. Because the program is geared directly towards building and maintaining gardens in municipal housing communities, all of the program's resources go directly to low-income area.¹⁶²

It is the second part of Tarrow's conceptualization of Political Opportunity Structure, the idea that the stability of political alliances can make or break a movement, that is at play in New York City. While New York City's government is relatively open to the urban agriculture movement and runs programs geared directly towards supporting urban gardens, there is no official urban agriculture policy. To review, the actual documents that dictate the city's stance towards agriculture are PlaNYC, a strategic plan for sustainability and resiliency, and

¹⁵⁹ "GreenThumb: About", *GreenThumb*, 2015, <http://www.greenthumbnyc.org/about.html>.

¹⁶⁰ Karen Washington (Founder of the Garden of Happiness) in discussion with the author, January 2015., and Sharon Sockwell (Member of Phoenix Street Community Garden) in Discussion with the Author, January 2015.

¹⁶¹ Karen Washington (Founder of the Garden of Happiness) in discussion with the author, January 2015.

¹⁶² "Green NYCHA: Resident gardening communities", *New York Housing Authority*, 2015, <http://www.nyc.gov/html/nycha/html/community/greennycha.shtml>.

FoodWorks and FoodNYC, policy documents circulated by elected officials.¹⁶³ Although these policy documents and strategic plans play an important role in dictating the actions of a municipal administration, they are not legally binding codes of conduct.

The fact that the relationship between New York City's municipal government is not formalized makes programs geared towards urban agriculture less secure. Karen Washington touched on this issue in our interview, saying that she is keeping "a close eye" on Mayor Bill de Blasio's attitudes towards community gardens.¹⁶⁴ Because there is no official policy towards urban agriculture, the programs that many farms and gardens rely on are vulnerable to the priorities of a given administration. As discussed earlier, gardening programs in lower-income neighborhoods rely particularly heavily on these programs. The tenuous relationship between government and gardens was apparent during the Guiliani administration in the 1990's. As discussed in chapter 2, the administration was very development-focused, and threatened to auction off 300 community gardens to housing developers. Karen Washington sites this conflict as the biggest challenge the community gardening movement has faced.¹⁶⁵ Although many community gardens were saved, over 100 were auctioned and destroyed. Most of the gardens that ended up being auctioned off were in the South Bronx and East Brooklyn, historically low-income neighborhoods.¹⁶⁶ The administration was able to do this despite the fact that GreenThumb had been around for 25 years and Green NYCHA's gardening program had been

¹⁶³ Nevin Cohen, Kristin Reynolds, and Rupal Sanghvi. *Five Borough Farm: Seeding the Future of Urban Agriculture in New York City*, ed. Jerome Chou. (USA: USA Print Craft, 2012): 66.

¹⁶⁴ Karen Washington (Founder of the Garden of Happiness) in discussion with the author, January 2015.

¹⁶⁵ Ibid.

¹⁶⁶ Laura Lawson, *City bountiful: A Century of Community Gardening in America* (Los Angeles, California, University of California Press, 2005), 260.

around for 32.¹⁶⁷ With nothing legally protecting urban farms and gardens, these spaces are still vulnerable.

The lack of formalized governmental support for New York City’s urban farms and gardens also influence the resources allocated towards the programs that are geared toward urban agriculture. The majority of the responsibility for allocating government funds to community gardens falls on Greenthumb, which is both underfunded and understaffed. In 2013, Greenthumb’s annual budget was \$655,454 and was serving 490 urban gardens¹⁶⁸. Although this may seem like a lot of money, we must keep in mind that Greenthumb must purchase resources like soil, lumber, seeds, and gardening tools, in addition to paying staff and running educational programming. In comparison, San Francisco's P-patch program, the city’s version of Greenthumb, had an annual budget of 669,071 in 2013 and only served 75 gardens.¹⁶⁹ In contrast with New York City, San Francisco has formalized urban agriculture legislation.¹⁷⁰ The legislation protects urban farms and gardens by making them an official part of the zoning policy in San Francisco. This legitimizes the practice of urban farming and gardening, and ensures consistent support on the part of the city government. In contrast, New York City’s lack of official legislation, zoning or otherwise, means that programs are constantly in flux, limiting the amount of resources available to these initiatives.

¹⁶⁷“GreenThumb: About”, *GreenThumb*, 2015, <http://www.greenthumbnyc.org/about.html>., and “Green NYCHA: Resident gardening communities”, *New York Housing Authority*, 2015, <http://www.nyc.gov/html/nycha/html/community/greennycha.shtml>.

¹⁶⁸ Nevin Cohen, Kristin Reynolds, and Rupal Sanghvi. *Five Borough Farm: Seeding the Future of Urban Agriculture in New York City*, ed. Jerome Chou. (USA: USA Print Craft, 2012): 128.

¹⁶⁹Ibid. 128.

¹⁷⁰“Urban Agriculture Policy Overview”, *San Fransisco Environment: A Department of the City and County of San Fransisco*, 2015, <http://www.sfenvironment.org/urban-agriculture/overview/urban-agriculture-policy-overview>.

The application of Political Opportunity Structure makes it clear that the government plays a key role in how resources are distributed throughout the two urban agriculture movements. In both cities, governmental programs surrounding urban agriculture act as equalizers, distributing necessary resources to communities that would not otherwise have access to them. In Mumbai, these types of programs are very limited, which leaves a large gap between low-income farmers along the railways and their more wealthy counterparts on community gardens. In New York City, a lack of official legislation geared towards urban agriculture leaves gardens vulnerable and funding scarce. The unstable relationship between government and gardens is particularly relevant in low-income communities, which rely most heavily on urban gardening programs. The use of Political Opportunity Structure shows us that governmental support can help urban agriculture movements reach lower-income communities, but that the relationship between government and the movements needs to be strengthened to truly reach that goal.

Conclusion: Bringing Social Movement Theories Together to Explain Resource Disparities

Throughout this chapter, Social Movement Theories have helped us explore the many different components of urban agriculture movements in Mumbai and New York City that make it difficult for the movements to reach low-income communities. Resource Mobilization Theory, New Social Movement Theory, Ideologically Structured Action Theory, and Political Opportunity Structure helped unearth the reasons behind our puzzle. Taken together, we get a holistic explanation for why two such different movements face such a similar problem.

Resource Mobilization theory helped to realize that urban agriculture organizations differ from more traditional Social Movement Organizations in the sheer quantity of resources they require to succeed. Because of this, the “free-rider” hypothesis is probably not at play and

perhaps wealthier farms and gardens deserve to be cut a break for their lack of social programming.

New social movement theory and ideologically structured action theory helped us realize how value differences within the movements affect the ability of different organizations to pursue resources. In Mumbai, new social movement theory helped to conceptualize how the different foundational values of different urban farming organizations were in direct opposition to one another, limiting resource distribution throughout the movement. NSM theory did not unearth opposing values within New York City's movement, but did point out differing values. Ideologically structured action theory helped us find that the value differences within both movements shaped organization identity and dictated what resources were available to a given urban agriculture organization. In New York City, resource-rich organizations tended to be perceived as having a citywide effect, while resource-poor organizations tended to function at the neighborhood level, limiting sources of funds. Additionally, resource-rich organizations tended to align themselves with environmental issues, which opened them up to an even wider resource base. In Mumbai, resource-rich organizations also aligned themselves with environmental issue. The environmental issues addressed in Mumbai were directly linked with livelihood issues, opening these organizations up to a wide resource base.

When we combine these discoveries with the insights received from resource mobilization theory, we get an even better picture of the dynamics within the two movements. Because each organization needs such a vast body of resources, there is bound to be an inadequate amount of resources available within the movement as a whole. If some organizations have access to a wider variety of resources because of their identities and values, then those organizations are more likely to succeed. Because every urban farm and garden desperately

needs these resources, and because the movement lacks a formal structure, an urban gardening organization that is able to acquire a larger body of resources is not likely to give them away. This is even less likely when resource-poor organization's values are in direct conflict with the values of resource-rich organizations, as is the case in Mumbai. Therefore, the relationship between values and resources within the two movements plays into resource disparities.

Lastly, political opportunity structure helped us the role that the government plays in distributing resources. Although Mumbai's government is far less open to the movement than New York City's, both municipalities run programs directly geared towards urban agriculture. When implemented, these programs help distribute resources throughout the city and support farms and gardens in low-income communities. These programs lack adequate support, however, and therefore do not completely close the gap. In Mumbai, the very organization that made railway farming possible ensures that it will never produce safe vegetables by neglecting to allocate any funds to infrastructure. In New York City, the absence of an official urban agriculture policy leaves urban gardens vulnerable to changing administrations.

A closer look at the complexities within these two movements calls the conceptualization of urban gardens as agents of gentrification into question. The idea that urban agriculture is a movement that only benefits the wealthy is unquestionably false. Throughout this chapter and the last, we have explored many examples of urban farms and gardens acting as a force of incredible change within all types of communities, regardless of income level. To discourage the foundation of urban gardens in low-income communities is to rob these neighborhoods of an opportunity for community development. Instead of focusing on the negative effects a garden can have in a community, we should be focusing on what can be done better to insure that the urban agriculture movement reaches the neighborhoods that need it most. The next and final

chapter explores the actions necessary for the movements to succeed. The chapter will outline the lessons learned throughout this study and will make suggestions for further research and future action.

Conclusions

Proposed Action Surrounding Urban Agriculture Movements and Suggestions for Further Research

Through the comparative study of the urban agriculture movements in Mumbai and New York City, it became apparent that these two very different movements face similar challenges when it comes to network formation and resource distribution. An exploration of each movement's past revealed the fact that each movement is rooted in its own unique history. Further study into modern day urban farms and gardens unearthed vast differences in size, scope, and resource availability. In Mumbai, the urban agriculture movement is very small and urban farms and gardens have access to a very limited body of financial, governmental, and non-profit resources. New York City's urban farming movement is much larger and has access to a wealth of resources that are not available in Mumbai. There is also a great deal of variability within each movement. Urban agriculture organizations within both movements pursue different goals and are based on different foundational values. Despite the variation within and between the two movements, one major theme continued to surface in both the interviews and secondary research. Both urban agriculture movements face challenges reaching lower-income communities. This challenge was apparent when visiting non-profit organizations attempting to serve an entire city, when speaking with community garden leaders who understood the complexities of running gardens in low-income areas, and when reviewing the secondary research that looked at movement-wide trends.

A common characterization of urban agriculture movements is that they exclusively benefit wealthy urbanites and displace existing communities from where they have lived for

generations. Although some urban gardens do contribute to gentrification, characterizing the entire movement as an agent of gentrification is inaccurate. Every single participant in this study listed goals that revolve around community development. Some interviewees expressed the need to reach low-income communities in order to truly recognize their goals. This makes sense, since many of the social goals urban farmers foster are particularly pertinent in low-income areas. Other urban farmers had been farming within low-income communities for decades and described immense positive change associated with urban gardening. To oppose urban agriculture as a whole would not protect these neighborhoods from gentrification, but would instead cut off these communities from important social and environmental benefits.

A close examination of the movements counters the claims that urban agriculture is something only wealthy people are interested in and can benefit from. This realization urges us to move away from thinking of the disparities in resource availability throughout the movement as an intrinsic part of an urban agriculture movement. Instead, these disparities should be thought of as challenges that both movements are attempting to overcome. The focus then shifts towards identifying the things that are stopping the movement from reaching its goals. Throughout the fourth chapter, four social movement theories were used to solve this puzzle. These theories are designed to facilitate the comparison of social movements, and were therefore particularly useful for achieving this goal. Resource mobilization theory illustrated the fact that urban agriculture movements require a vast amount of resources, making resource distribution difficult. New social movement unearthed value differences within the two movements may lead to divisions. Ideologically structured action theory showed us how ideological differences between organizations within each movement made it so that some organizations had access to a greater body of resources than others. Lastly, political opportunity structure revealed the ways that

government help to distribute resources throughout the movement, but do not provide enough support to ensure that urban agriculture movements reach all of their target communities.

This final chapter will outline potential solutions to overcome the problem of unequal resource distribution and the lack of network formation across socioeconomic boundaries within the two urban agriculture movements. These suggestions are based on insights from the use of social movement theories. Although I do not presume to have all of the answers such a complex problem, the suggestions made would be well-informed first steps towards increasing access to the movement in low-income areas.

Looking forward: Suggestions to Improve Access to Urban Farms and Gardens

This study calls attention to disparities within both urban agriculture movements and explores the underlying causes of these disparities. The fact that two such different movements exhibit such a similar pattern implies that these issues are linked to the nature of urban agriculture movements. This means that careful thought and concentrated effort needs to go into combating these disparities. This section details suggested action based on insights gained from social movement theories.

The first and most important insight gained from this study is the need for more government programs aimed at urban agriculture. As we saw in the last chapter, the government programs that support urban agriculture act as equalizers within the movement by increasing resource access within resource-poor gardens. In New York City government programs need to be geared directly at low-income communities. Although GreenThumb supports several gardens in low-income areas, the program is not necessarily geared toward these neighborhoods. Some sources even point out the fact that lower-income neighborhoods may have a more difficult time accessing the resources that GreenThumb and other governmental organizations provide because

they are less likely to be aware that these programs exist.¹⁷¹ By ensuring that these programs are explicitly geared towards low-income communities, the government ensures that the resources go to the communities that need them most.

In Mumbai, the government must first allocate resources to ensure that railway farmers have the necessary infrastructure to farm safely. Without this infrastructure, railway farmers will never be able to produce safe food. It is irresponsible for the government to set up an agricultural program without providing the necessary infrastructure for successful farming. The provision of necessary infrastructure will also benefit Mumbai's urban farming movement by mending the value gap between non-profit community gardeners and railway farmers. If railway farmers were able to produce safe food, they would not be directly countering the actions of community gardeners, and the two groups would be able to work together. Programs aimed at ensuring that railway farmers are able to produce safe vegetables would have an immense impact on the movement's ability to access low-income communities by actively supporting low-income urban farms and by ensuring that these two types of urban farmers can work together.

Secondly, both movements would benefit from an official governmental policy supporting urban agriculture. Including urban agriculture in the zoning regulations of a city is incredibly important for the stability of the movements. Legally protecting urban farms and gardens makes it so that these spaces are seen as permanent parts of the urban landscape. Neither municipal government has a policy like this in place, leaving urban farms and gardens vulnerable. As discussed in the previous chapters, urban gardens in low-income areas are more vulnerable to the pressures of developers. This means that the lack of a zoning policy related to urban agriculture makes it more difficult for the movement to reach low-income areas.

¹⁷¹ Nevin Cohen, Kristin Reynolds, and Rupal Sanghvi. *Five Borough Farm: Seeding the Future of Urban Agriculture in New York City*, ed. Jerome Chou. (USA: USA Print Craft, 2012): 128.

Next, there needs to be a reconciliation between the different identities present within each city's urban agriculture movement. As discussed in the previous chapter, differing foundational values within each movement have made it so that organizations take on different identities. In Mumbai, environmentalists identify with community gardeners while the work of railway farmers is thought of as highly localized. In New York City, commercial farmers have taken on an eco-friendly identity, while community gardeners are seen as sources of community development. It is important, however, that these different organizations be seen as one movement. In the end, urban agriculture organizations contribute to the same causes. Just because a community garden does not value environmental first and foremost does not mean it is not collecting rainwater or reducing food miles. Just because railway farmers are forced to use wastewater does not mean they are not preserving traditional agricultural knowledge. Because these identities limit resource access, conceptualizing these different types of organizations as contributing to the same movement would aid in the distribution of resources throughout both movements.

Lastly, there is a need for additional research into urban agriculture movements. Urban agriculture is a source of economic and environmental good in many cities. But because it is just recently becoming popular in many urban areas, there is very little research on the subject. Looking forward, additional research will be important to furthering urban agriculture. An urban farming movement can benefit greatly from the documentation of all of the instances of urban agriculture throughout a given city. In New York City, this work is being done by The Design Trust For Public Space in their book *Five Borough Farm*. Mumbai lacks this sort of resource, but would benefit from it. In Mumbai, it was very difficult to find urban farmers to talk to despite the fact that there are clearly several instances urban agriculture throughout the city. This type of

work would require much more time and a larger team. The research could be a great step towards building unity within the movement in Mumbai.

I also believe that there is a need for more multinational or at least multicity research on the subject. Studies on urban agriculture often focus on a single case study, which is valuable, but it is difficult to draw conclusions about urban agriculture as a whole from these studies. In this study, the disparities within the two urban agriculture movements were much more notable because the movements were looked at comparatively. If I had looked at the two movements individually, urban farmer's comments about resource distribution challenges would have been one of many different challenges expressed. It was only after noting the variation between the movements that this similarity truly stood out. After identifying this commonality, I was able to discuss the factors that are intrinsic to urban agriculture movements that lead to these disparities. I was therefore able to move away from discussing urban agriculture in a localized context and to speak about the things that all urban agriculture participants can do to combat disparities within a given movement.

Additional comparative study could strengthen the claims made in this paper and provide additional insights into urban agriculture as a practice. Including an overview of urban farming in Detroit, for example, could provide an example of an urban agriculture movement where land is readily available. Due to abandonment of many urban spaces after the city declared bankruptcy, urban farmers have access to a great deal of land. Urban farmers in both Mumbai and New York City are constantly fighting developers for access to land, and it would be interesting to see how dynamics within a movement change when land access is less of an issue. Additionally, including a study of the urban agriculture movement in San Francisco could provide insights into how a zoning policy affects resource access. Following the logic of this

study, one would expect to find more equality in resource access with increased governmental policy and support. If this is not the case, other possibilities would need to be explored. By including the experiences from several different cities, we ensure that all aspects of urban agriculture movements are being explored. This allows us to make well-informed suggestions to urban agriculture movement leaders across the globe and would ensure that movements were able to build off the successes of others.

Along the same lines, a method of analyzing metrics of success quantitatively would be a useful tool to facilitate single or multi-city studies on urban agriculture. Because the goals of urban farms and gardens are so diverse, it is often difficult to look at them comparatively. Establishing a set of possible metrics that gardens could choose to report could be a useful way to measure the success of a movement. Design Trust for Public Space is working on a method for establishing, recording, and sharing metrics in New York City. Urban farms and gardens can record the pounds of crops they produce, the number of children they taught, or several other established metrics, and post them to the organization's website for analysis. Implementing this scheme on a wider scale could facilitate idea sharing and provide more meaningful data.

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