FOOD URBANISM:
URBAN AGRICULTURE AS A STRATEGY TO FACILITATE SOCIAL MOBILITY IN
INFORMAL SETTLEMENTS

by

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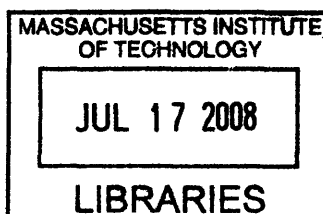Research Associate
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According to UNFPA

Poverty is now growing faster in urban than in rural areas.
One billion people live in urban slums….

I am dedicating this thesis to those one billion.

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Submitted to the department of Architecture and the Department of Urban Studies and Planning in partial fulfillment of the requirements of the degree of Master in City Planning and Master of Science in Architecture Studies
At the Massachusetts Institute of Technology

Abstract

Can community-based urban agriculture generate stronger communities? How is this possible?

This thesis explores the possibility of community development through application of community gardens in an informal settlement near Tehran, Iran. It is expected that this will happen through collective community action and decision-making processes.

The role of the architect and planner has studied and defined as the facilitator. The hypothesis was that if the community members share a common piece of land and create a framework for sharing this space over time, they would strengthen their community ties and interaction. In other parts of the world, particularly in poor and disadvantaged areas, urban gardens provide a powerful vehicle for food production and local access while build up on the community's social and political capital.

After careful analysis of the community's public life and spaces, this thesis defines four dimensions for an urban agriculture project. While the land use dimension defines the selection criteria for potential community gardens, the social development dimension explores the ways to include different social groups in the process. In the implementation strategies dimension, the technical issues of an urban agriculture project have been studied. Finally, the fourth dimension outlines a strategy for enabling the community to set up a sustainable urban community garden in their neighborhood.

Introduction

Community-based urban agriculture can create stronger communities through collective community action. Being a multi-stakeholder and inter-disciplinary task, it involves many institutions and community members, creating a sense of shared accomplishment in the end. Urban agriculture is an important tool in community development because it translates the methods of food production to community-driven and community-managed activities. Community-based urban agriculture supports grassroots action by giving community members a sense of inclusion in the decision-making and implementation processes.

In poor and disadvantaged areas, urban gardens provide a powerful vehicle for food production and local access. According to the Food and Agriculture Organization of the United Nations, low-income families in the developing world spend between one-third to two-thirds of their income on food.[1] Urban gardens typically contain a variety of different vegetation that is locally produced, from vegetables, fruits and trees, to ornamental plants and flowers. By planting in leftover or available land within neighborhoods, these productive landscapes provide the community with access to inexpensive and local food streams.

As a form of productive green open space, urban agriculture is also an effective conduit for implementation of multi-use public spaces within neighborhoods. In different parts of the world, urban gardens are used as public open spaces. These contained greenspaces help to support sustainable urban lifestyles while also cultivating the types of social activities that were previously relegated to more rural areas.

Worldwide, many cities use urban agriculture for food production purposes only. Large cities like Shanghai continue a tradition of urban farming despite a fifteen percent growth rate per year.[2] Urban

agriculture takes place in many cities in African countries, particularly those cities with a medium-density urban fabric. Kenya, Ghana and Tanzania, have successful practices, as well as Cuba.[3]

In addition to food production benefits, urban agriculture has social, environmental, and economic benefits. Urban agriculture helps neighborhoods to upcycle their own natural waste, eliminating expensive waste treatment facilities and enriching the soil quality on-site. It can employ traditionally marginalized groups such as women, teenagers and the elderly, serving as an effective device for social entrepreneurship. Urban agriculture also has become a useful tool for many urban neighborhoods' sustainable food production strategies.

Urban community gardens also help to provide places a with physical identity and to establish social connections. This identity extends beyond the garden, into the neighborhood and community, and is one of the most important outcomes of urban agriculture. In cultivating a physical identity for a neighborhood, urban agriculture helps communities to gather? over a common vision.

Urban agriculture contributes to the existing social capital of a community in a number of different ways. On the one hand, urban farming builds up a sense of community ownership over a shared food system that in turn leads to a sense of group empowerment. Moreover, urban farming gives each community member an opportunity to learn how to interact with others, grow food, and solve problems collectively.

Community-based urban agriculture also builds political capital. This happens through the necessary political action that is required to move these types of projects forward. This political takes place through the collaboration of the community with local and central governments ,

as well as organizations with municipal power. Political power is also shaped by collective decision-making processes and basic leadership exigencies within each garden. Community members practice leadership by establishing and managing the urban farming project and then through the advocacy, problem solving, and negotiations that ensue with the municipal government.

This thesis begins by framing a summary of urbanization alongside the history of informal settlements in Tehran. The second chapter provides a basic literature review of urban agriculture as a form of public space and highlights its role in social development. This chapter will also review the fundamental concepts of urban agriculture including, benefits, challenges, and case studies. The third and fourth chapters cover a more detailed case study of Mianabad, an informal settlement southwest of Tehran, in Iran. The third chapter reviews the general information about the neighborhood while the fourth chapter looks at the social behavior and public spaces already existing in the neighborhood. The fifth chapter provides the project plan for Mianabad, including the different dimensions and disciplines that the project encapsulates. Finally, the conclusion targets directions for potential further research.

Chapter One
Informal Settlements in Iran: History & Causes

Summary

Many informal settlements can be found to the south of the city of Tehran. Different researchers have identified different reasons for this phenomenon. Some of these reasons include: rapid urbanization, inefficient low-income housing policies, lack of adequate city planning system, decline in agricultural industry, and incorrect urban development policies. This chapter summarizes the existing literature on the history and reasons for the existence of the informal settlements surrounding Tehran.

It is important to note that most informal settlers around Tehran are not considered squatters because through a semi-legal process the settlers actually own the right ot the land they build on. The settlers lease the right to the land from the government. This is based on an Islamic law called "waqf" which allows people to donate their land to the Islamic government. Thus, the informal settlement that is used as a case study in this thesis cannot be categorized as a "squatter settlement" or a "slum".

Informal Settlements around Tehran: Formation and Causation

Like many other cities in the developing world, Tehran faces the problem of informal and spontaneous settlements on its edges. As the largest city in Iran, the population growth has also been the highest.[4]

The city's 200,000 inhabitants in 1279 has grown to more than twelve million today, while Tehran's geographic boundaries have also expanded. (Appendix 1)

Since its inception, Tehran has specialized in a service economy. Following the agricultural decline and industrialization of the country, former villagers and farmers migrated to Tehran in search of these service jobs, which was becoming a center for both wealth and the wealthy. It is believed that the first informal settlements in Tehran have formed during Naser al-Din Shah (1848-1896), the Qajar king, outside the city walls.[5]

The exact number of the informal settlers in Iran has been a subject of debate. There are several different statistics published by different public and private organizations, ranging from Zahra Eftekhari Rad's estimate that there are four million informal settlers in Iran, to[6] UN-Habitat's report that 21,763,000 informal settlers live in Iran[7]. The Deputy Minister of Housing and Urban Development stated that nearly twenty percent of the country's urban population (about sixty-eight million) are informal settlers.[8] These fluctuating numbers not only indicate false assumptions, but also point to the lack of a standard definition of these settlements at the governmental level.

While the numbers are broadly scattered, the author believes that based on what Zebardast has stated in 2006, about one-eighth of the country's urban population--- about 5 million people--- live in informal settlements. This population is expected to double in a decade. Nearly seventy-five percent of this population resides on the fringes of the ten largest cities in Iran.[9] Among these ten cities, Tehran, Zahedan, Bandar-Abbad and Kermanshah have the largest populations. About forty percent of the growth in Tehran Metropolitan Region belongs to informal settlements. Also, the population growth on Tehran fringe

has been more than the city itself. (Figure1) In the past three decades, Tehran's population has increased 2.3 times while the population on Tehran's fringe has increased by 7.8 times. This disparity in growth percentages clearly shows that the major increase in city's population has happened in informal settlements around Tehran.[10]
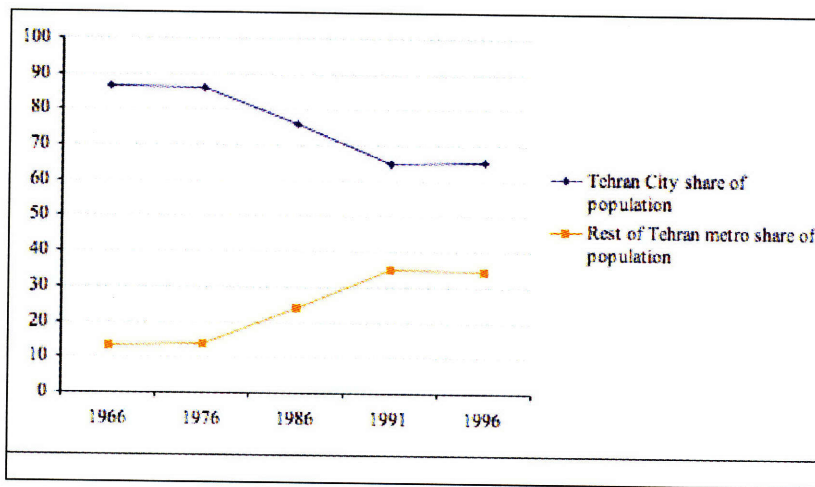
Figure 1 | Share of population in Tehran City and Tehran Metro.
(Adapted from Zebardast)

The distribution pattern of the informal settlements in Iran shows that thirty-four percent of the informal population exists on the edges of megalopolises (cities with a population over one million), while forty-four percent reside on the urban fringe of cities with a population between 250,000 and 1,000,000) and twenty percent are located on the edges of cities with the population of fewer than 100,000 individuals. These numbers have been summarized in Table 1. This table shows that the most informal settlers reside on the edges of big cities. In other words, twenty-seven percent of the population of cities with a population of 250,000 or more are informal settlers.

Other statistics indicate that only sixty-five percent of the informal population is located in the legal boundaries of these cities while the other thirty-five percent is located outside the city boundaries and thus are not serviced by any municipality.[11] Until two decade ago, most of these settlers were migrant workers from other cities and villages around the country. Recently, however, most of the informal settlements around Tehran have been comprised of the previous low-income residents of this center city who could not afford living in the capital and thus migrated to the fringe.

	City's Population	Informal Population	Percent of City's Population	Percent of Country's Informal Population
Cities with population less that 100,000	10,483,000	571,000	6	22
Cities with population 250,000 to 1,000,000	5,737,000	1,089,000	19	44
Cities with population over 1,000,000	9,910,000	840,000	8	34

Table 1 | The Distribution of Iran's informal population based on cities' sizes. (Adapted from Eftekhari Rad)

It is also notable that the quality of informal settlements in Tehran is better than most other developing countries. Based on a The United Nations Human Settlements Programme (UN-HABITAT) report,

in 1995, the average residential surface in low-income developing countries was 6.1 square meters and in middle-income developing countries 15.1 square meters, while in squatter settlements around Tehran this number was nearly sixteen square meters. In low-income developing countries, fifty-six percent of the population lives without sanitary water while in squatter settlements around Tehran, this number was only 5.6 percent.[12]

After interviewing scholars, academics and managers at the Ministry of Housing who are responsible for informal settlements' upgrading, the author realized that there is a little evidence of squatters around the periphery of Tehran. The informal settlers around Tehran own their land semi-legally and are not land invaders. After residining on the unused land that is owned by the government, these groups pay a small fee to lease the right to the land. This lease is supposed to last for the duration of ninety-nine years. However, they have built their housing units with less durable building materials and without any compliance with building codes and zoning regulations. Thus, they cannot be categorized as squatter settlements or slums and are named "informal settlements" in this paper.

While many researchers believe that informal settlements around Tehran were originally shaped due to rural-urban migration, a recent study has shown that at least for the past couple of decades, intra-metropolitan migration is a more dominant pattern.[13] The same study shows that the majority of these informal dwellers on Tehran's metropolitan fringe are long-term urban dwellers that were not able to afford housing closer in and were pushed to the urban fringe. They have purchased their land informally and by "promissory note". Therefore, the majority of informal dwellers have resided at the fringe somewhat legally or based on an informal land acquisition. Invasion of land is normally not the case in Tehran's informal settlements.

A number of research projects have addressed the primary reasons for the establishment of the informal settlements in Iran. Some researchers have mentioned the "Land Reform Act" established by the second Pahlavi king in the 1960s and was a strategy to more fairly distribute the land between farmers. Before this act, most of the farmers in Iran did not own their agricultural land and were working on big landowners' parcels. When the land was distributed between the farmers, most of them sold the piece they earned and migrated to the cities. This was parallel with the economic decline in the rural areas of the country, which caused rapid migration to the cities. In case of Tehran, the most important reasons for structuring of informal settlements can be summarized below:

- **Rapid Urbanization** | Urbanization in Iran has been on a high speed. In two decades from 1976 to 1996 the urban population of the country has increased from 15.8 million to 36.8 million while the rural population has increased by 5.4 million. The number of towns in Iran has increased from 366 in 1976 to 614 in 1996. During the decade of 1986-1996, 118 villages have turned to cities and towns. This shows that all the rural villages that have had potential to become cities have turned to one. In the decade spanning 1986-1996, the number of Iranian cities with a population more than 250,000 has increased from eight to twenty-two.[14]

- **Decline in Agriculture Industry** | One of the main reasons for the rural-urban migration is the decline in agriculture industry. In Iran, from 1956 to 1996, in the course of forty years, the workers in the agriculture industry have increased by 3.8 percent while the population is 3.2 times more. This is while the agricultural production has increased by six times and the land dedicated to agriculture has increased by two times. This is also because of the mechanization of agriculture in Iran. Looking at workers' age shows that in 1966, 17.3

percent of the agriculture workers have been over fifty years old while this number has increased to thirty-seven percent in 1991. This clarifies that fewer people are entering agricultural industry nowadays.[15]

- Lack of a Correct City Planning System | One of the other reasons that can be counted for structuring informal settlements around Tehran can be the lack of a correct city planning system. City planning was not an official discipline in Iran and Tehran till 1960s. The first master plan was done for Tehran in 1966, which increased the minimum land parcel requirements from 100 to 300 square meters. This requirement pushed the urban poor out of the city boundaries because they could not afford the minimum and parcel in the city. The first big squatter settlement, Eslam-Shahr was shaped outside Tehran at this time.[16]

One of the other problems with the city planning system is the rigidity in city boundaries and zoning regulations. There are two boundaries, defined in urban development plans in Iran. The first one, called "The legal city boundary" is the boundary that is managed by a municipality. Governmental agencies are supposed to provide services and infrastructure for land parcels within this boundary. Zoning regulations and building codes are also enforced in these boundaries.[17]

The other boundary called the "Preserved Area" is the city's periphery in which any construction is prohibited and it is preserved for the future growth of the city. The informal settlements normally shape in this part of cities. One major reason for this phenomenon is tremendous difference in land prices in and out of city boundaries. The fact that the urban poor need the city while they cannot afford a land parcel in its boundaries pushes them out. The irony is that the zoning regulations are not nearly enforced as hard as the municipal boundaries. While illegal construction is done easily in informal settlements without any compliance with building codes, the rigid city boundaries still deprive

the poor from services.

- Inefficient Low-Income Housing Policies | Due to fast urbanization and shortage of land in Tehran, land prices have climbed up very fast. The housing price index has finally outrun the inflation index in 2002 (Figure 2)[18]. Tehran also has the highest land and housing prices among all Iranian cities. In general, home ownership in urban areas of Iran, including Tehran has increased.[19] This tendency towards home ownership has caused the migrant population to purchase land and build homes in fringes of big cities.

The process of shaping the informal settlement around Tehran had a major wave around the revolution in 1979. This could be caused by decrease in governmental supervision during those years due to political struggles going on in the country. In years 1976-1986 about 498,000 housing units were added to Tehran's housing market. 35 percent of all housing units built in 1980-81 were built without a license on urban fringe. In an informal setting, home ownership for the urban poor starts with purchasing a small piece of land and constructing in it. The tendency to own land can be explained by admitting that land is a limited resource and its price will increase. In addition, by owning their building, a family will be flexible in adding to the house surfaceas it expands.
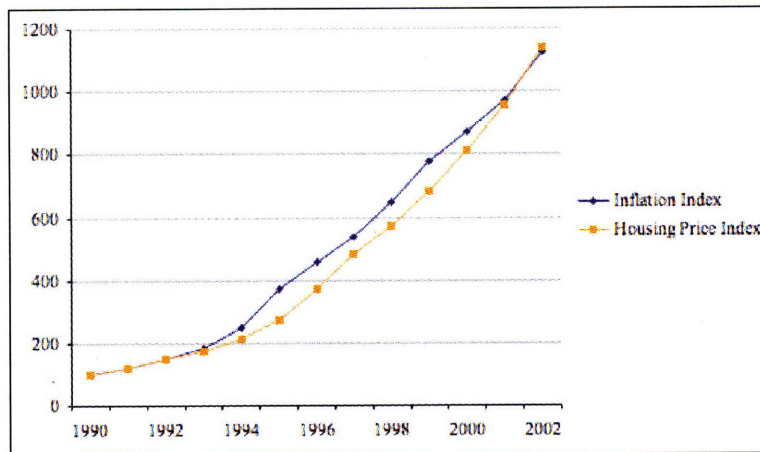
*Figure 2 | Housing price index and inflation index in years 1990-2002
(Adapted from Chegani)*

Government in its modern meaning was established in Iran about a century ago. Iran's
First governmental organization responsible for the country's planning and development was established in 1949. Since then, the country has gone through more than ten development plans. The first and second plans did not contain any separate chapter for housing policies. Since the third development plan up to now, housing has had a separate chapter in Iran's development plans. These plans are for a 5-year period except for the first two, which were 7-year plans.

The housing policy in Iran has had some success, however it never caught up with the housing need and thus, people started to build informally. One of The reasons the housing programs never worked was the fact that housing plans in Iran were unsuccessful in recognition of the targeted groups. Policies and finance schemes were always beneficial to low-to-middle income groups and not the urban poor.

Since the establishment of the first financial institution in Iran (Bank-e Rahni) in 1938-39, housing finance systems were designed in a way that only the low-to-middle class families with formal jobs could use them. To be able to use financial assistance of such institutions, a family should have had a savings account with certain amount of money and/or a sponsor that was a government employee.

This system automatically deleted the 30 percent of the population employed by the informal sector or 20 percent unemployed population. After the revolution of 1979, a law was passed to provide the low-income people with land parcels. (ghanoone- zamin shahri). This was going to be done by allocation of facilities such as cheap land, construction material and loans to formal workers' cooperatives of the factories and workshops with seven or more workers.[20] Many of the informal settlers, which were working in smaller workshops or informal businesses, could not use this law to become homeowners.

- **Inefficient Urban Development Policies** | Most Iranian cities experienced excessive peri-urban growth after the implementation of the urban development plans. This is also true about informal settlements around Tehran, which were also shaped after 1966 master plan.[21] The problem in these plans is lack of correct connection between regional and local plans. This has resulted in disconnection between housing and economic development policies.

As mentioned before, the solution for managing the informal settlements in Iran and specially Tehran has been their inclusion in the city boundaries. The biggest cities in Tehran Metropolitan Region excluding Tehran and Karaj have initially been informal settlements. Eight out of nine towns established in 1997 were such informal settlement. In 1998, there were 17 spontaneous settlement with the population of 10,000 or more people on the waiting list to be elevated

to "city" status which is defined as an "area with legal boundary" located within the geographical boundary of a certain county (Bakhsh) with a population of at least 10,000 people.[22]

One of the other solutions for the informal population was establishment of new towns, which were constructed mostly on the fringe of big cities in order to house the urban population who could not afford housing in the cities. The Ministry of Housing and Urban Development had initially announced that new towns are opportunities for government employees to become homeowners. This indicates that this policy was only for formal employees and has not targeted the urban poor and informal shelters. Most new towns were unsuccessful in absorbing the predicted population while informal settlements were being built on other areas on urban fringe. One reason can be the imprecise locations. The second reason can be that on average minimum 200 square meters was determined for legal land parcels in new towns, which was more than what the urban poor could pay.

Governmental Policies and Programs for Informal Settlement Upgrading

So far, the different governments of Iran have perceived the problem in different phases. The first phase, which happened during the second Pahlavi king in 1940s and 1950s, was ignorance. For quite some time, the government ignored the existence of informal settlers. After constant increase in their population, the former regime had to acknowledge their existence. However the solution they created was to bulldoze the areas, which they called "problematic".[23] This fact brought the informal settlers in line with the revolutionaries against the Shah's government. For some background it is notable that the Islamic revolution of 1979 in Iran had goals of poverty reduction and social justice. Khomeini, the leader of the revolution, stated that this

revolution was all about the fight between the "shanty dwellers" and the "palace dwellers". In this sentence, he is referring to illegal settlements built poorly with inappropriate material on the governmental land on the edges of the cities.

The third phase of informal settlements' upgrading started after the revolution of 1979. The government tried to solve the problem by expanding the legal boundaries of the city in order to include all informal settlements in a municipal boundary.[24] This incoherent strategy continued till 1998 when for the first time, a new approach to enabling and upgrading was sought. This was a turning point in the country's history in dealing with informal and squatter settlements of Iran and can count as the forth and final phase in which upgrading and rehabilitation of informal settlements was set as part of a comprehensive review of current urban planning and management processes.[25]

As a major step in this new approach, the cabinet approved a national document called "Strategies for Enabling and Regularizing Informal Settlements" in January 2004. This document contained main principles and strategies for a multi-sectoral intervention for upgrading informal and spontaneous settlements of Iran. It is mentioned in the document that there was a need for such a document due to "lack of a coherent program to addressing informal settlements in Iran" and also "weakness of inter-sectoral co-ordination". The national document was followed by establishment of "National Task Force for Enabling and regularizing the Informal Settlements" in Ministry of Housing and Urban Development in March 2004.

The document addresses several goals, which are categorized in three groups. The first category is providing a safe and healthy environment. Suggestions include creation of a national steering committee responsible for overall decision-making. Support of locally elected

institution as a focal forum in planning to support capacity building, social capital and civil society is another suggestion in this category. At this stage, the document emphasizes on a multi-sectoral institution at city level, which indicates the government's knowledge of previous disconnection between various sectors. This will also facilitate the exchange between public sector and residents. The document puts a lot of emphasis on consensus building amongst all stakeholders, which is a very new approach in top-down Iranian system of town-planning. In addition, encouragement of professional NGOs to support training of civic rights and environmental knowledge and justice is suggested.[26]

The second group of goals is providing affordable and accessible infrastructure and basic services. The actions to be undertaken include the review of planning regulations and building codes with a view to affordability. This can be supported by promotion of self-built and self-help constructions. In addition, financial sustainability is sought by provision of materials and encouraging compact construction along with mixed-use zoning regulations. Extension of research on building technologies in a national level is also suggested.[27]

The third group of goals is preserving environment and cultural heritage through participation of all residents in the decision-making processes. Recommended actions include support of innovative mechanisms to provide the low-income groups with formal financial assistance. This can be enforced by creation of housing and employment funds within low-income communities. In addition, avoidance of un-targeted subsidies and credit lines is sought. Finally, special assistance for creation of public spaces within the informal settlements is encouraged.[28]

Overall, this new approach to enabling and upgrading the spontaneous and informal settlements has been success in Iran's history of town-

planning. With assistance and supervision of the World Bank and with tenure of new younger planners in the Ministry of Housing and Urban Development during the former president, Khatami, this national document includes all the necessary means for a democratic planning strategy. This system has been experienced in informal settlements of three different cities of Kermanshah, Bandar-Abbas and Zahedan, which were ultimate successes. At the moment the task force is about to start the initial study of the informal settlements around Tehran, which will hopefully come to the same successful result.

Chapter Two
Community Based Urban Agriculture

Summary

Urban farming has been used in many countries in the world to develop community cohesion as well as food production and collective community activity. It can be used to build up social, environmental and economic justice while is a tool for community development, all the while improving the nutrition level and empowerment of women.

As asset based community development strategies suggest, the development projects should look for potential assets in a community to use as a base. At Mianabad, its most evident asset is its agricultural land. With the shortage of agricultural products and the fact that poor families spend 40 to 60 percent of their income on food, using farmland, surrounding Mianabad as a way to provide a productive and financially sustainable public space was key.

Urban Agriculture Concepts

Regardless of the economic level of the community urban agriculture is practiced in, urban farming builds up a social organization around a common vision that can potentially create stronger urban communities. This is called community based urban agriculture. Providing the residents of poor neighborhoods with resources to enable them socially and facilitate their social mobility is the key element of this thesis.

Urban agriculture is a form of "Productive public space". These are spaces that are public while providing a possibility for the residents

to use them for productive activities. In the case of urban agriculture, food production is used as a tool for income generation and social entrepreneurship. Productive public spaces are one form of public space that can be implemented successfully in informal and poor settlements, since they do not require much resource from the government and can be financially sustainable.

Although in western countries urban agriculture has had a more recreational role, urban farming is primarily practiced as an income-generating activity that guarantees food security for a community. Livelihoods, resource utilization, and an environmentally friendly neighborhood are other positive effects of urban agriculture. Community gardens as one form of urban agriculture can provide a community with satisfying labor, neighborhood improvement, sense of community and connection to the environment. These gardens are normally built on the public land and are managed by local governments with collaboration of community leaders and organizations.

Community based urban agriculture is different than other forms of urban agriculture. Not only it focuses on food production aspect of the urban gardening, but it also looks at the social impacts of it. In other words, community based urban agriculture tries to build social institutions over creation of a framework that allows people share a common place. It focuses on entrepreneurial market-oriented urban farming which enables the more economically disadvantaged groups of the society. In addition, it explores the ways that a recreational space can be created for the community that is financially and environmentally sustainable.

Community based urban agriculture creates a centerpiece that allows the different member s of the community interact over a shared interest. It is a potential for the community to establish objectives and

work interactively to achieve them. It mobilizes the community to communally intermingle with different governmental organizations to reach a common ground for collaboration.

Benefits

There are certain social, economic and environmental benefits of urban agriculture.

Social benefits:

- Collective action and common interest as a means for community development: urban agriculture and community gardens are beneficial to a community's social cohesion and capital. Communities that lack social cohesion can use the urban agriculture as a collective action that binds different groups of the community by sharing a common interest. Social inclusion of disadvantaged groups is another benefit of the urban farming system.

- Creation of financially sustainable green open space for the community: There is also another dimension of community building through urban farming and that is providing the community with green open space that is financially sustainable and is community cultivated. The fact that a community organizes and manages a project all together is a community-building tool.

- Creation of a sense of ownership towards the neighborhood: If a community feels that they have a sense of ownership and control over their local food system, they will also start believing in their power and control over their security and destiny. In

essence, urban agriculture can be the catalyst in creating a sense of empowerment and shared accomplishment.

- Empowerment of women: In the same token, urban agriculture can be a tool of empowerment for women, allowing them greater economic independence which in turn helps to break down gender barriers.

- Building on neighborhood leadership and power: urban agriculture activities in a city or a neighborhood are not possible without collective action and collaboration of different stakeholders. Making an urban farm or community garden in a neighborhood means building a massive amount of political capital, which later can be used in dealing with the local government and other authorities for requiring amenities and services.

Economic benefits

- Social entrepreneurship: the production that happens with urban farming is a simple way for people to become entrepreneurs. When resources are available, urban agriculture "whether producing food, fuel or ornamentals, is often the largest industry in the informal local economy."[29]

- Creation of a financially sustainable neighborhood: in creating powerful self-sustained neighborhoods, urban agriculture has a big role. While it is a channel for individual community members to achieve their financial goals, it can also create a channel to bring money to the neighborhood by generating taxes and fees from economic activity taking place there.

Environmental benefits

- Community green spaces for leisure and production purposes: one of the problems with urban green spaces in informal and poor settlements around and within the cities is the fact that these dense urban settings do not have the financial power to maintain these spaces even after they are created by the authorities or NGOs. The other problem is that normally these areas become centers for gangs or the crime-prone youth to gather and they lose their public sense.

  Using a community urban space as a community garden or an urban farm creates a shared environment that is community cultivated and thus watched and guarded by the community. This use will also eliminate the problem of maintenance since these areas are maintained and productively used by the people working on them.

- Urban agriculture as a tool for waste management: urban agriculture uses the human waste to generate food products; this is one of the most useful recycling systems that is very financially sustainable. Average urban solid waste that is generated is 0.6 kg per person per day, which is a big quantity. Collection of urban waste is a major challenge for the authorities in all parts of the world. There are many problems regarding waste management in big cities specially in the developing world. In informal settlements this is even a bigger problem since a correct urban waste management system was never planned. Urban agriculture can use natural waste and reproduce it for agricultural activities.

- Urban agriculture as a tool for green food production cycles:

the chain of activities connecting food production, processing, distribution, consumption and waste management can be defined as food production cycle. Food production cycle in the world today is based on transportation. The financial and environmental costs of food transpiration are unknown. "Food miles" is a term for measuring how long food travels from where it is grown to reach the consumers. In 1980, a study showed that fresh produce in the United States travels on average about 1500 miles.[30] If a neighborhood is able to sustain its own food needs they will not need outside food from other cites and perhaps other countries. This is a contribution to a more green food production cycle.

- Improvement of urban microclimate: cities are a system of inter-related sections, which constitute an ecosystem. Spaces are means of creation of a microclimate in dense polluted areas of cities and especially informal settlements and poor neighborhoods. The high physical and population density of these areas along with an improper waste management system creates an environmentally polluted climate, which can cause hazards to human health and environment. Using urban waste in composting and reusing it also has the benefit of reducing the amount of landfills around the cities, which is another environmentally hazardous space and costs the city much of its resources.

Risks and Challenges

There are some risks involved with urban agriculture and farming. The main risk is the possibility of irrigation of food with urban

wastewater. If the neighborhood is near a factory or an industrial area that cause contamination of the earth and water with chemicals, the risk of unhealthy crops increases. There should also be a substantial assessment of the community's ability to produce food and participate in urban farming activities.

Other risks are more on the policy side of the issue. If the urban farming activity works well and starts being economically beneficial to individuals, there may be conflicts over the ownership of the land with authorities so there should be careful consideration of allocation of land and property rights. There is also the question of bringing outside candidates to the neighborhood, which is a policy concern and can be a source of conflict between the people of community and outsiders.

Urban Agriculture: A Multi-Disciplinary and Multi-Stakeholders Process

Urban agriculture is a multidisciplinary matter. It involves many sectors of development such as public health, land use planning, environmental protection, waste management, economic, social and community development. For urban farming to be successful, there should be advocacy in the community and a great collaboration between different sectors of the municipal government and local NGOs and community groups. Considering that urban agriculture is a multi-stakeholder process, there is a need to develop a strategy to ensure the success of the process. Based on Marielle Dubbeling and Gunther Merzthal, the application of MSP on urban agriculture should contain the following elements:[31]

- *Enhancing public awareness and motivating the different*

stakeholders to actively participate in action planning and policy design | There is a need for advocacy both in the community and also in the public sector and the municipality and local authorities. There should be many cultural and educational programs that will bring to people's attention the need for a better open space system as well as a local food production system. Different forms of media can be involved as well as local advocacy by community leaders and active NGOs.

- *Capacity building* | This is needed to begin implementation of the urban farming project. This capacity should be recognized and built among local actors to develop participatory action. Different educational programs can be started in schools and other local educational institutions to teach the youth and women of the community about different techniques and instruments or farming.

- *Building trust and cooperation* | the many actors and stakeholders in the processes of implementing an urban agriculture system should be subject to consensus building and shared interest. This can happen through clear and transparent information flow and ease of communication about different expectations.

- *Policymaking as well as joint action planning and implementation* | policymaking should follow action planning and implementation. Actions should translate into adequate policies. Policymaking should happen with a vision of multi-stakeholders planning processes. Pilot projects are important in attracting people's attention and trust so the ret of the projects can be implemented successfully.

Case Studies

Mumbai: Development of City Farm at Rosary High school, Dockyard Road

Based of Dr. Doshi's patented urban agriculture sustem, and implemented by the Municipal Corporation of Greater Mumbai, this project had homeless children as its focus group. The municipality of Mumbai spends 265 Rs. Per person per year to collect, transport and dispose 7500 tones of garbage produced everyday. Dr. Doshi's system is based on application of hermophillic bacteria as an odorless and non-mechanical method for rapid decomposition of waste.

This program targeted Indian street children. There are 20 million street children in India, which are clear manifestation of the deteriorating social and cultural fabric of the Indian society. Objectives of this program was to manage organic waste in the city sustainably while provide economic support for street children, preventing them from resorting to begging, crime, drugs etc.

The pilot project was conducted in a city school. Students with collaboration of street children make a farm in their school. There was technical instruction from experts in the field. The tools and material were also provided for the kids. The production was mainly focused on flowers, vegetables and fruit and the produce was sold in a local market by the school. The children involved in the pilot project then trained other street children to make this process a self-sustained one. The pilot project was initiated at the Rosary School, Dockyard Road, Mazgaon, Mumbai in collaboration with an organization called Vimla Vikas Kendra, which works for the empowerment of women and children.

The pilot project involved a group of 10 street children from

economically disadvantaged social level. This model was then replicated in other parts of the city. A local NGO was in charge of managing and monitoring the progress the kids from day to day. An agriculture/horticulture expert was also hired to guide the kids with technical hints in city farming and maintenance.

Space for the remaining projects was provided by local authorities, housing societies, corporate, religious and educational institutions with spare space that could be used as a city farm. Plants were donated by the local nurseries after campaign and advocacy. Also local organic food suppliers were contacted to sponsor this project.

This project was not necessary the most successful project in the past years. Project evaluation in 2005 showed that there were several problems with the way this project was managed. This was due to the lack of enough advocacy and mistake in choosing the "targeted group".

The NGO that was chosen had a different perspective on the issue than the project managers. The NGO was more focused on the "education and training of the youth" but the managers were also focusing on the issue of "greening the city". When the NGO refused to take responsibility of maintaining the city garden, the problems came to be clearer. [32]

São Paulo: The 'Cities without Hunger/Community Gardens Project'

This project is designed for the coming year (2008). The goal of this project is defined as "to foster the local community's interest for collective work through the sharing of responsibilities, services and products; to rationally exploit unused, idle areas; to build the

professional skills of local community producers; and to raise the level of income and productive occupation of the poor population of São Paulo city's East Side." Project site is a ten square-hectare area located on Bento Guelfi street, Jardim Laranjeiras, in São Paulo's East Side. In contrast to the project in Mumbai described in the previous section, this is a large project planned for a big vacant lot in the city.

The marketing strategy for this project is defined as using brochures, leaflets, and other printed materials along with Street banners, caps and T-shirts, Internet website, publicity signs, press, videos and similar. There is much emphasis on publicity and advocacy for this project.

This project seems to be more careful in defining the exact target group, which includes families residing in the area surrounding the community garden who are also unemployed. It also has a specific criterion in giving priority to women to ensure gender equality and female empowerment. There are four defined phases in this project, which are sensitizing, participatory planning, participatory experimentation and diffusion. This methodology is used to engage the local community and food producers in a holistic view of the food chain and promotion of autonomy with regard to the management of the ventures set up by the community. Based on the phases, the project has six different goals and a specific plan to achieve each of them. These goals are defined as:[33]

- *Setting up one 10-square-hectare community garden nucleus in the city of São Paulo aiming to promote the social insertion of disadvantaged communities through skills building and job and income generation* | This will happen through Setting up the pilot project which is a community garden nucleus in the East Side of São Paulo while training 500 producers and holding five workshops on agriculture and

farming techniques.

- *Foster food education to tackle nutritional deficiencies of poor communities* | This will happen by holding workshops, course and lectures on food re-education and alternative foods.

- *Introduce environmental and sanitary education building on local contexts* | This will be achieved by holding workshops on medicinal plants, composting and environmental and sanitary education.

- *Set up small processing units for produce harvested* | The project claims that by implementing one small farming project, eight jobs will be created.
- *Create and implement mechanisms to stimulate producers to process value-added fresh vegetables and fruits* | The plan is to educate project participants with farming credit instruments to fund small urban farming projects. There is also a mention of educating the community through holding workshops and courses on rotating funds and credit cooperatives.

- *Foster the organization of urban farmers' associations and cooperatives targeting the selling of their produce* | The plan suggests field trips to region's food wholesaler, along with courses on objectives, cooperativism, associatism and rural management and hygiene handling of food and vegetable processing.

In total the project is asking for $ 144,000 and is suggesting that it will employ 1500 people and will indirectly benefit about 3000 people by providing a family with cheap organic food and economic safety.

Havana: Urban Farming Since 1989

In 1989, the local government of Havana authorized people to use governmentally owned vacant land parcels in and around the city. Representatives from different institutions and media formed a commission to provide support for this act. At the moment urban agriculture occupies about 12 percent of the land of Havana. It also links 22,000 urban and peri-urban producers and provides the citizens with 150 to 300 grams per capita of vegetables and herbs in addition to elimination of the urban garbage dumps.

The city government of Havana asked the ministry of agriculture to provide the citizens with the necessary technical training and management of the empty lots around the city. Havana is one successful example of achieving a consensus between community and local government in the promotion of urban agriculture. At the end of 1989, vacant lots outside the city, which were designated for housing or industrial uses became available for urban farming. The government gave those plots (normally over one hectare) to the labor centers that had a large number of workers and minimal resources.

The program was set up in a way that there was no need for cut trees or build any construction. The workers of these labor centers volunteered for exploitation of the lots. Each work center was allowed to produce as much produce as possible to feed their workers and the surplus would be sold to the workers or if was not needed by the workers would be donated to day-care centers, elderly homes and facilities for the newborn babies. A small amount was sold to the population around the centers.

The number of plots decreased from 400 to 292 in years between 1996

and 2000. The reason was the general increase in Cuban economy and allocation of land to other economic activities. The urban farms are transformed to different businesses and functions. The mechanism is that if the work centers want to return these land parcels to their original function, the municipality turns them to gardens, forested areas, fruit orchards and other permanent crops that require minimum daily labor. If the land is not owned by the labor centers, the municipal agricultural commissions take over these land parcels and determine their uses. Some of the uses include:

- Assignment of the plots to independent farmers in condition of keeping the lots in good production. The farmers can divide the land to different segments for consumption of the same group of producers. The surplus produce can be sold at the market.

- Allocation of the lands to cooperatives of farmers. The land is granted only in condition of complete exploitation of the land plot by the farmers. The land will be taken over by the government if the farmers cannot handle the land development job well. The use of the agricultural land is determined by government guidelines on social priority.

- There is an exception in which the farmer who is making the best and most produce out of their plot will be allocated the land.

Lincoln, Nebraska: New Community-Supported Agriculture program

This urban agriculture started in Nebraska as collaboration between the University of Nebraska at Lincoln with Fresh Start (a homeless

women's transition program) and Community Combining Resources, Opportunities and People for Sustainability (CROPS). It all began in 2002 with only one community garden. Now there are four gardens and a new four-acre community farm in Lincoln. They are working with the immigrant community and people from disadvantage groups including students and women. One example is "Grow! Grow!" which is a club shaped in Prescott Elementary School where students learn about different aspects of community gardening including composting, eco-systems and gardening.

Lincoln community gardening allows the residents to buy shares in "Sunset Community Farm" 's summertime harvest. This share will provide the residents with fresh produce, which gets delivered to their preferred pick-up locations in their neighborhood once a week from mid-June to late September. Pick-up points are determined each year in May, after all shares have been bought. Home delivery is also possible with payment of a small fee. The selection of the produce along with the total volume and weight of the delivery package is different from week to week. The amount of the produce given to each shareholder is equivalent to one and a half shopping bag.

What is different about this farming system is that the shareholders do not have to work on the farm in order to use its produce. It is a way for a society to be self-sustained itself and occupy a section of the community.

	Positives	Negatives	Is the project a public space?	Does the project targets social development?
Mumbai	Good consensus building between different stakeholders: NGO, schools, private sector.	Lack of transparency in defining the goals of the project.	Yes, the projects have become neighborhood green spaces.	Yes, the main goal is to employ street children of Mumbai and make them work with the school kids.
Sao Paulo	An inclusive marketing strategy, good advocacy. Good choice in targeting women as main stakeholders.	Too many objectives in local and national level. Phasing needs to be more precise.	To some extent. The main purpose is economic empowerment and food production. But, there is a vision to bring the community together through workshops and classes.	Yes, this project aims for fostering the community's interest by sharing of responsibilities and space. It also has a strong educational component in food production and nutrition.
Havana	Good consensus between community and local government, successful in becoming a national goal, paid attention to cooperatives.	Very top-down approach. The government manages everything.	No, the food production is the main goal.	It is not defined in the objectives, but it enables the farmers economically and creates a green food production cycle.

Lincoln	Successful in engaging the whole community in the urban gardening project. Partnership between the university-community. Availability of the produce to the groups that do not work on the farm.	Have not explored the new trends in agriculture, very low-tech and cannot deliver produce all year.	Yes, the community gardens are places of public gathering and belong to all the community.	Yes, the organizers work with immigrant community and people from disadvantage groups including students and women.

Table 2 | Comparison between different selected case-studies.

Chapter Three
Mianabad: A Small Settlement

Summary

Many informal settlements have emerged southwest of Tehran. The reason for this is that there exists an industrial route, which employs many low-income migrant workers from all over the country.

One of the largest informal settlements of Iran, Eslam-shahr, has a population of 500,000 and is located on this industrial route to the southwest of Tehran. The case study that was chosen, called "Mianabad", is a neighboring community to the east of Eslam-shahr. This chapter reviews the history and formation of Mianabad, along with the background information necessary to understand the context of the settlement.

Context

Mianabad is a small informal settlement, which was born next to a bigger one, Eslam-Shahr. One of the largest informal settlements in Iran, Eslam-shahr has a current population of about 500,000 inhabitants. It started as an informal settlement on the southwest of Tehran when it began to absorb population from all over the country after becoming the center of wealth and trade in the mid 19th century.

The largest informal settlements around Tehran have developed in the southwest and southeast corners of the city. Due to natural limitations, Tehran has reached its maximum growth to the north and west. To

the north and northwest, Tehran is bounded by mountains. On the south, there is a higher level of underground water. This fact along with existence of a large cemetery and a refinery makes it impossible for the city to grow further towards south. On the other hand, on the southwest and southeast of Tehran, there are two major roads and train lines which are bound by industries in both directions.

Eslam-shahr is located on the southwest of Tehran on Saveh road, which is an industrial route with many industries including factories and small workshops located along it. (Figure 3)
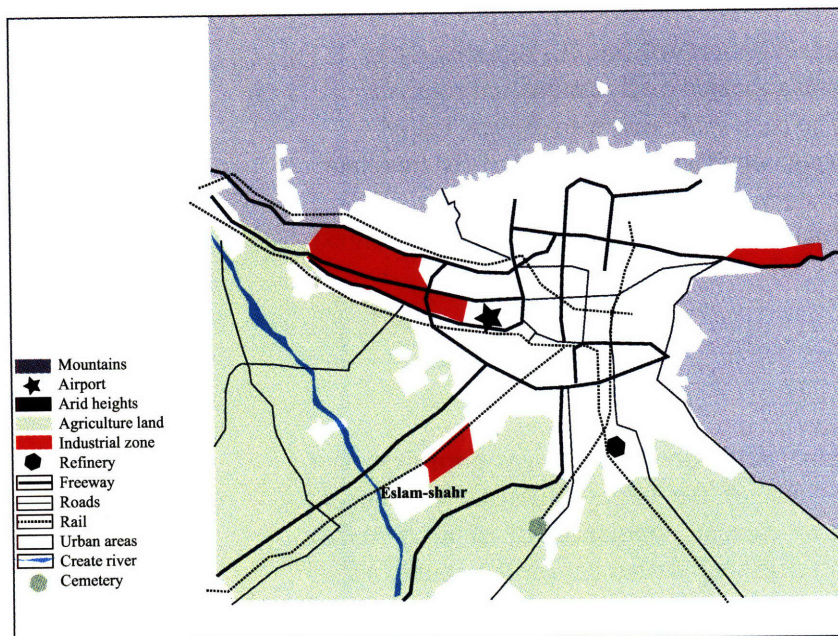

Figure 3 | Location of Eslam-shahr in Approximation to Tehran, Showing Natural and Built Limitations to Tehran's Growth (Image by the author, based on the information from Tehran's Municipality website)

Eslam-Shahr was a completely agricultural society in 1600s, mostly shaped around a fortress called "Ghasem-Abad Shahi". There is evidence that people reside in and around present day Eslam-Shahr four centuries ago. In 1880s, there were 100 families within the fortress area. In 1967 Eslam-shahr was a community, which consisted of 10 villages with the population of 1000 people or 200 families and it was sustained by agriculture.[34] However, after construction of the Karaj dam, the villagers did not have enough water to sustain their agricultural activity. This overlapped with the land reform act of Iran in 1960s. This act, proposed by the shah of Iran, reclaimed the land from the feudal landowners and distributed the agricultural land between the farmers. The farmers, then sold the land to the new immigrant communities moving to the city.[35]

In 1977 this newly established community was consisted of 50,000 people and 29 separate villages, which were named "Shad-Shahr".[36] Although it was never considered a city or urban community, this community was closely tied to the factories around it and was contributing to the country's production cycle. At the moment, around 50 percent of the residents are working in the industries located along Karaj and Saveh roads.

Eslam-shahr occupies an area of 210 square kilometers and geographically is the smallest city of Tehran province. It has a slight slope from north to south and a population growth rate between 18 to 23 percent. For a long time, the government of Iran did not acknowledge the existence of these settlers and refused to provide them with amenities to provide the potential future immigrants from coming to the capital and its peripheries. The government also refused to elevate Eslam-shahr to "city" status to prevent the residents from acquiring the amenities and necessary infrastructure that a city should have, which caused in riots in 1990s. After the riots, the government

acknowledged the existence of the settlers and provided them with more facilities.

In terms of existing opportunities for the residents, there is no opportunity, which might enable the residents to pursue a productive activity in the area. Based on official statistics, the main percentage of people in rural areas of Eslam-Shahr work in industries located along Saveh Road (49%) while 42% work in the services section and the rest 7% work in agriculture.[37] This shows that there are not many local opportunities for the people of Mianabad. There are some industrial development going on at the moment, which can change the dynamics of jobs and opportunities. These include opening of Khomeini International Airport, a new Tehran-Saveh expressway and relocation of the rail terminal to the two villages on the northwest of Eslam-Shahr, which can all be sources of jobs and opportunities and can attract more people to the area.

Criteria for Choosing Mianabad as a Case Study

While there are many similar settlements around Tehran, I chose Mianabad as my case study because of the reasons described below. I arrived at Tehran assuming that I would find many shantytowns and squatter settlements around it. However, in my first set of interviews and literature reviews, I realized that there are not many of settlements built with shacks and without basic infrastructure such as water or basic sewerage. There are many reasons for this; my hypothesis is that the Islamic republic's strategy in governance is to provide the lower-income groups with more amenities. In other words, the allocation of resources to different socioeconomic groups in cities is more distributive. The former regime of Iran did not succeed in gaining the support of the poor and this was one of the main reasons for their failure. The major criteria for choosing Mianabad are listed below:

An urban or semi-urban settlement | It was important to find a settlement that can be categorized as "urban". While there are several communities around Tehran that are rural and do not have access to basic infrastructure, I was looking for a community that at minimum consisted of an urban fabric. The term "semi-urban" means that the people in this community are living in an environment that has a physical form of an urban neighborhood, but the activities and social structures are not as advanced as the city dwellers. Also, they are not exposed to opportunities to change their life paths or destiny or coming out of the poverty cycle.

Immigrant community | one other important criterion was to find a community that is consisted of "new-comers" or immigrants. The social structure and the meaning of public space in communities like this is an interesting phenomenon to study. The methods of interaction between different groups, the spaces they create and use and their social boundaries are important to research. These are "dis-placed" people who are transplanted to new physical spaces and a new social network, which are unknown to them. In Mianabad, this separation between different groups was noticeable. The fact that these social and ethnic groups do not mix in Mianabad motivated me to choose this settlement.

Disconnection from the city | one major characteristic of the squatter and informal settlements in the periphery—and even inside—of the cities, is the disconnection of the members from the resources that the city has to offer and its effect on the public and private lives of the settlements' residents. Informal and marginal settlements are established around the cities to provide the city-dwellers with services. They have a big role in informal economy of cities, however they do not take advantage of the city's resources. Mianabad is a perfect example of such a community that is located close to a city while it is

socially and culturally disconnected from it.

Small community with manageable population | of all the settlements that were located around Tehran, I had to choose a community that was of a manageable size. As a solo researcher, I realistically needed to choose a small settlement. Mianabad was a small settlement with 40,000 population and small geographic boundaries, which made it convenient to study.

Newly established community | I looked for a settlement that is not too old. Older communities have a more established form of public space and public life. Mianabad became a town in the past 30 years and many of its population have migrated less than 15 years ago. The study of the public life and space in such a new community without solid social structure and almost without social cohesion was a challenge. I wanted to test the strategies for building community capital and social cohesion in an environment that lacks basic urban connections between its community members.

Mianabad

Information gathered in this section is coming from various sources. Initially I looked up magazine and newspaper articles in a database provided by the Ministry of Housing and Urban Development. I was unable to find anything from academic papers and research. The third source was field research and interviews and surveys I conducted on the site. The "Mianabad Comprehensive Plan" was the last source that I found in the municipality of Mianabad. The Comprehensive Plan does not convey much useful information about the social structure and specifications of the site and is more focused on the physical specifications.

Figure 4 | Aerial photo showing the location of mianabad next to Eslam-shahr and the surrounding agriculture land (Source: Mianabad Municipality)

Sixty of the residents of Mianabad were interviewed during the months of February and March 2008. The interviewees were chosen with various methods. In the beginning, I walked in the neighborhood and talked to people. The second step included entering the stores, mosques and educational centers to find people for interviews. The last step was to knock on people's doors and ask questions. There were 30 men and 30 women who were interviewed from different age groups. I believe that I have covered all different social layers of the community. The education, age and family size distribution of the interviewees proves this fact.

History

Located 4 kilometers east of Eslam-shahr (Figure 4), Mianabad was a former village, which is now included in the city boundaries of Eslam-shahr since 2000. During the decade of 1967-1977, Mianabad was an agricultural village with the population of 78 people. After the revolution of 1979 when the rural-urban migration was increased because of the economic consequences of war and political instability, Mianabad like other places around Tehran was filled with migrant workers from other parts of the country.

Mianabad's formation in the city boundaries of Eslam-shahr is an interesting common phenomenon echoed in other examples from around Tehran. Governmental policies in dealing with informal settlements have resulted in the formation of new settlements in their peripheries. This is because when an informal settlement becomes a city, there exist laws and regulations for the minimum land parcel requirement. This makes the informal settlement unaffordable for many new immigrants that cannot afford the minimum land parcel requirement. Thus, they establish new communities in the periphery of the original settlement. Mianabad is an example of these settlements

(see chapter one).

Initially, 12 farmers, who earned the land afte after the land reform act of 1962, owned land of Mianabad. [38] These landowners later donated the land to the government under the rule of "waqf". Waqf is an Islamic law, which allows people to donate their belongings to the Islamic government. There is a big governmental institution that owns all the donated properties and has the right to manage them. The land in Mianabad, which is now under supervision of the government, is leased to the current inhabitants of the neighborhood. About 50 percent of the land parcels of Mianabad are leased through legal contracts with the resident and the government. The rest are in the process of getting a legal contract.[39] The lease is usually for 99-year period.

Similar to many informal settlements around the world, most residents have moved to Mianabad overnight. They moved to the neighborhood and built structures with very weak materials and started living in them immediately. There is also a suspicion that there are professional builders that build overnight and then hire people to move in the structures the next day so the government cannot destroy the building.[40] The residents normally lease the land afterwards through real-estate agencies, which manage the governmental properties.

The municipality and the city council have tried to prevent the new immigrants from building constructions that are not compliant with the building codes but unfortunately the neighborhood watch guards are bribed by the residents and the newcomers and thus there are still houses that get built without any compliance to the building codes and safety requirements. There are many real estate agencies all over Mianabad, which manage the land transitions, showing that there is quite a big demand for land and properties in Mianabad.

In municipal boundaries, Mianabad was considered a village until 6 years ago. It had a village council which was the village representative in the municipality. The residents wanted Mianabad's municipal status to become a "small town" and thus they submitted a request. When villages reach a certain population, they can submit an application to be elevated to the "city" status. The residents wanted the "small town" status since in the Iranian town-planning system, certain amenities cannot be allocated to a village. An example of this is the allocation of a natural gas pipeline, which was implemented when Mianabad became a town; If Mianabad were a village, the residents would be required to pay 50 percent of the expenses as co-payment.[41]

In the past six years since Mianabad became part of the Eslam-shahr municipality, it is also managed by Eslam-shahr city council, which does not have any members from Mianabad. Thus, residents feel that their voices are not heard anywhere anymore and they are not considered in any of the city's decisions. The city, on the other hand, looks at Mianabad as a problematic area that is filled with illegal construction and is hard to control. In discussions with city council members, I realized there are conversations about extreme plans to stop the construction in the area. One example is the proposal of a green belt around the neighborhood to prevent more construction.[42]

Population

There are different population estimations for Mianabad by different stakeholders. The village's population increased from 10,576 in 1987 and 18,628 in 1997, which is the year of the last census. At the moment, based on the city government and the council members interviews and based on the calculations in the "Mianabad Comprehensive Plan", the population of Mianabad is about 40,000. However, after interviewing several community members, I realized that people of

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Mianabad believe that the population is about 60,000.[43] Mianabad's Comprehensive Plan, which is based on the Census information, shows a population growth that is shown in the figure below.
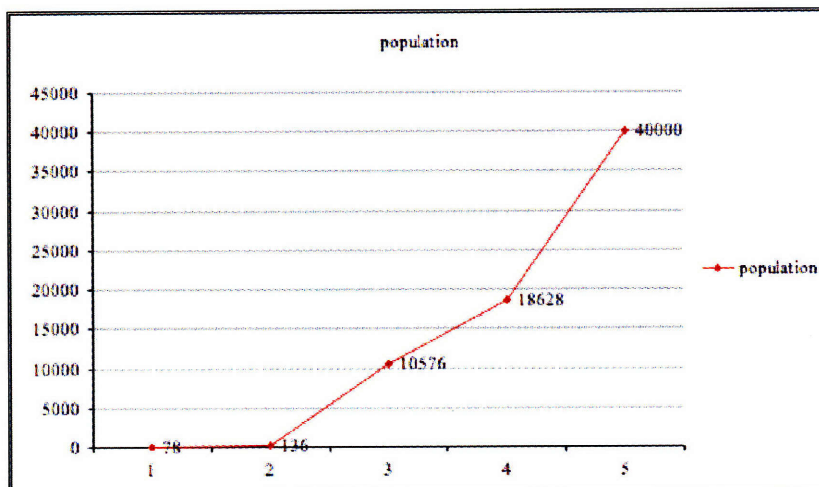

Figure 5 | Changes in the population of Mianabad (based on Mianabad Comprehensive Plan)

The existing urban fabric of Mianabad is a grid shaped along the entrance road to the village and is developed from west to east and southeast along the natural slope of the land towards the former agricultural land. The population density of Mianabad is different between the three distinctive neighborhoods. The oldest part of Mianabad has the highest population density.

Migration Pattern

The migration pattern of Mianabad is different than most other informal settlements around Tehran. Normally, the settlers migrate from their city of origin to Tehran for a short period of time and after coming to

the realization that they cannot afford living even in the city's ghettos, they move to the periphery and join the rest of the informal settlers.[44] This way, they can own a piece of land, even informally, and this is a source of "peace of mind" for them.

Mianabad residents however have mostly moved here from their original cities. In the surveys conducted on the site, the majority of the population of Mianabad (about 85 percent) are there because of family connections. It is a small, close-knit community that people learn about from their relatives. Only 15 percent of the community stated that they do not have any relatives in Mianabad.

The residents have moved to Mianabad mostly from the "Turkish speaking" cities of Iran. These are the tribes that are from Turkish decent and live mostly in the northwest of Iran. The biggest immigrant groups of Mianabad are from Sarab, Tehran, Ardebil and Hashtrood (Figure). The interviewees who mentioned Tehran as their original city were mostly not born in Tehran and moved to Tehran from their city of origin.
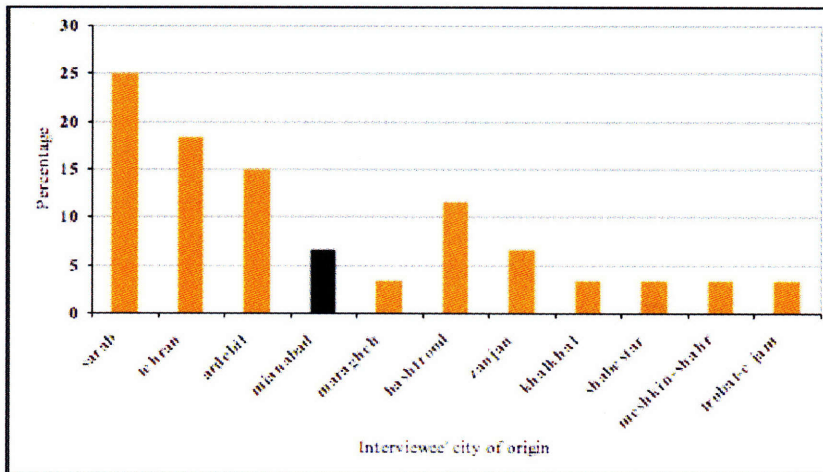

Figure 6 | Settlers' city of origin

Land Use

Visiting the neighborhood, I realized that there are not many different uses on the site. Mianabad is mostly a residential neighborhood with some commercial land use. (Figure). The commercial activity normally takes place on the ground floor of the residential buildings (Figure). For other necessary uses, Mianabad residents go to Eslamshahr or use the resources of other nearby cities. There is almost no piece of land that is used for leisure.
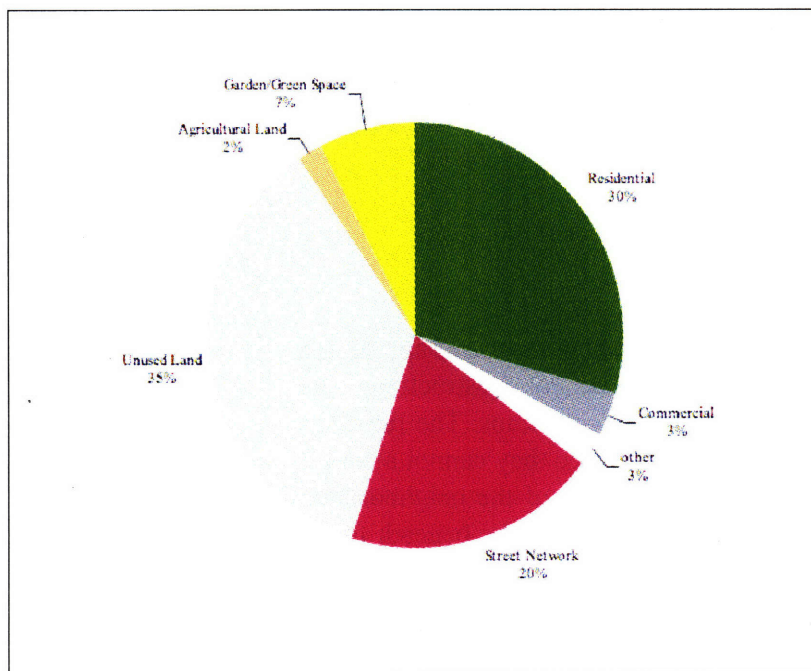

Figure 7 | Land use chart of Mianabad. (Data Source: Mianabad Comprehensive Plan, graph by the author)
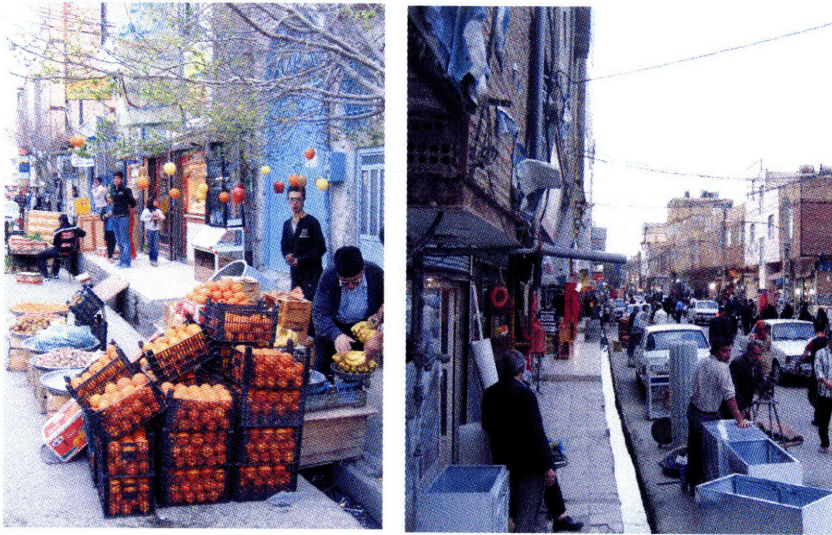
Figure 8 | Examples of a commercial use on the ground floor of a residential building.

Urban Fabric

Mianabad has a very dense urban fabric. Small plots of land are located next to each other and form an interlocked chain of constructions. The construction material is mostly brick and steel beams. The residents do not cover the façade with any material since they cannot afford it (Figure). Thus, the whole physical appearance of the neighborhood is exposed bricks, which sometimes show the beams beneath them. Wealthier families have stucco or stone façades. Colorful windows are also another form of decoration for the wealthier residents.

Figure 9 | Buildings without facades.

Education

The education level in Mianabad is relatively high. About 34 percent of the residents have a high school diploma and only 6 percent are illiterate (Figure 10). The youth in Mianabad are attending around 20 units of schools in all educational levels (table 2). There is also an education center for adults, which has educated many illiterate people. Unfortunately, many youth do not attain higher educational levels after high school. Only 2 percent of the interviewees are enrolled in a college level education.
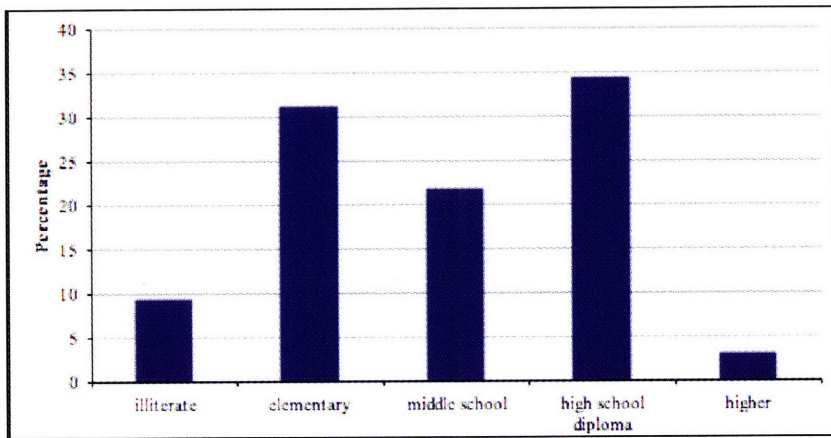
Figure 10 | Education level of the interviewees

School Type	Units	Number of Students
Pre-elementary	5	192
Elementary	7	2600
Middle school	4	1543
High school	3	932
Technical school	1	305
Total	**20**	**5572**

Table 3 | School Types in Mianabad (Based on the information from Ministry of Education)

Age Groups

Mianabad has a very young population. The largest age group of the neighborhood is the group aging between 21 and 30 years old. A total of 60 percent of the residents are under 30 years old.
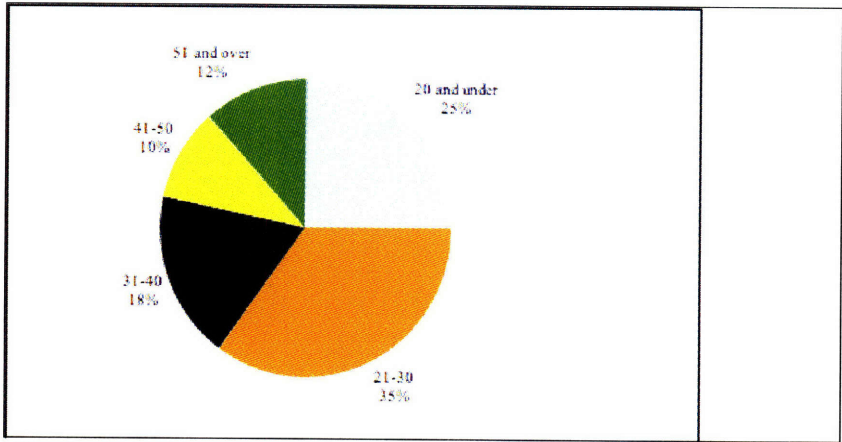
Figure 11 | Age groups in Mianabad

Chapter Four
Social Structure and Public Life in Mianabad

Summary

The social life and public spaces of Mianabad was the subject of the field research. The purpose was to understand the level of social connection between the community members and the relationship between the local government and people. This was categorized in two parts, the public life and social behavior.

The public life research contained social institutions, public spaces, leisure and social ties of the settlement. Then, the next category included the exploration of different social behaviors that people had in different public spaces. The reason for this research was to understand the underlying social potentials and capital, while exploring the different possibilities for social development of the community.

For detailed description of methodology, see Appendix 2.

Mianabad Public Life

The social structure of Mianabad was the main purpose of the field research. While I needed some basic background information such as age, education and occupation, the necessary information for the final step of the thesis, the project plan, came from the interviews with residents and the observations of the site.

There were two different methods for understanding public life and spaces of Mianabad: observations and interviews. The observation method included several actions from looking at newspaper articles to trace the activities on the site. The second category was to

interview people to understand their social behaviors. Questionnaire was designed to clarify social ties, social cohesion, public life, the opportunity to meet new people, neighbor relations, the connection to Eslam-shahr and Tehran and so on. Below, these categories and the related methodologies are defined in detail:

Methods for interviews and surveys

The questionnaire was focused on the social behavior and relations. The questions were designed to include all the aspects of social interaction and potentials. There were four categories that were targeted in this questionnaire. These include: Knowledge (what do people know, how do they understand it), beliefs (thoughts, feelings, ideas), behavior (what people do) and attributes (demographic information).[45]

The questionnaire was designed in an open format. An open-format may not be the best way of interviewing people since it is time consuming and extra work is required to tabulate statistical analysis on them.[46] However, open-format allowed me to talk to people individually and to start conversations and make connections. The questionnaire design was also important since it was a method to quantify some sort of qualitative data. Translating the results into numbers and charts was done later in the process. A sample questionnaire is shown below.

I also conducted several interviews with different public and private stakeholders. Amongst them were deputy mayor on cultural affairs and policy, two members of the city council, Parviz Halimi (Former village council member), Ali Kamali (head, Workers' House Cultural Center). For information about the questionnaire, see Appendix 3.

Public Life in Mianabad

Social Institutions

There are two active cultural entities in Mianabad at the moment. While there are many religious groups and committees scattered along Eslam-Shahr and Mianabad, there are no influential cultural facilities. The city council and the cultural wing of the municipality are active players in the cultural existence of the community. However they are also mostly focused on funding religious groups to provide the community with more religious material. In such an environment, the existence of two main cultural-educational entities in Mianabad is a matter of importance. These two are called the " Workers' House" and "Baseej".

Baseej | Baseej is a commodity that is sponsored by the leader of the Islamic Republic of Iran and the religious political right wing. The translation of the word "Baseej" can be "Mobilization Resistance Force"[47]. It is a volunteer based Iranian paramilitary, which was established in 1979 by the order of Khomeini, the leader of Iran. The idea was to have a unit of Baseej in each city, however, today this has translated to having a unit in each neighborhood and in every governmental organization. Baseej has changed to a force that controls the ideas of the members and feeds them with the political and religious views of the central government.

The fact that Baseej is a right-wing political- military organization does not eliminate its role as a community service center in Mianabad. There is a Baseej unit in Mianabad that also works on cultural and educational issues. They are not the main player of the cultural scene, however, due to lack of cultural entities, the services they provide for the community are valuable. They supply the public with services

such as literary classes for the illiterate, kindergarten, group trips to religious destinations and religious classes (Figure 12). They create a social support network for their members, which is helpful in eliminating ethnicity barriers between the community members.

Figure 12 | Baseej functions as kindergarten

The Workers' House | The workers' house is a non-governmental organization and has nearly 60 to 70 cultural and educational centers around Iran. Their services are free of charge with a small registration fee for people who can afford it. The registration fee in Mianabad is 3200 Tomans (Each Dollar is about 950 Tomans) that is paid for a whole family as a membership fee and all family members can use the facilities. This NGO was created by a few parliament members that are concerned with the wellbeing of workers and laborers. The founder and head of the workers house is Ali-Reza Mahjoob, who also has been a member of the parliament for several terms. There are two branches of Workers' House in Eslam-Shahr, one in Bagh-Feiz and one in Mianabad.

Young people who took advantage of services at Workers' House work there as volunteers. The Workers' House is also a location for some of the neighborhood's youth to discuss the problems and shortcomings of Mianabad. Whenever there is a problem, or if the community demands services from the government, they gather and draft letters together. Thus, the Workers' House acts as a community center for the neighborhood.

In 3 years, the Workers' House has had 3000 students, boys and girls. This institute has been a great opportunity especially for girls since they are socially restricted from going anywhere other than their own neighborhood. They have different educational courses such as computer, electronics, accounting, languages, sewing and so on. There is also a computer site with ten computers, which members can use like an Internet café. The internet is a great source of providing a community with information and social awareness and this is what the Workers' House is trying to do. Other services include establishment of an educational institute, which prepares the students for the university entrance exam. In the past three years they have helped 25 students to pass the university entrance exam.[48]

The relationship between the two major cultural commodities in Mianabad is complicated. The problem comes from the fact that the Workers' House belongs to the political left and Baseej is tied to the extreme right. Thus, there is a hidden political tension between the two commodities. In Mianabad, Baseej is in the opposite side of the Workers' House since the latter is a left wing political organization. According to Kamali, the head of the Workers' House, the members of Baseej were asked to not attend the Workers' House classes

Leisure

"Leisure" has a strange connotation for the people of Mianabad. It is something that is simply missing from their social lives. For them, life is all about work and family. The responses to the question "What do you do for leisure?" were mixed with wonder, doubt and strangeness. About 35 percent of the community members answered "nothing" to this question. Other responses included "hanging out with relative", "going to Tehran", "going to Eslam-shahr" and "hanging out in the street". Leisure, for the people of Mianabad does not include movies, sports, cultural programs, or simply socializing with friends. Only one out of 60 interviewees mentioned "friends" as a form of leisure.

The relationship between Mianabad and the surrounding urban periphery was not very strong. Only 13 percent of the interviewees mentioned "Tehran" as a place they go to, for leisure. Amongst them, 87 percent go for reasons other than leisure such as work (25 percent), visiting relatives (16 percent) and other reasons (47 percent). Nearly 60 percent of the people who go to Tehran, use public transport. The public transport to Tehran is not inconvenient, thus the fact that the residents do not go to Tehran to take advantage of the resources shows the exclusion of this community from the city that they provide service to.
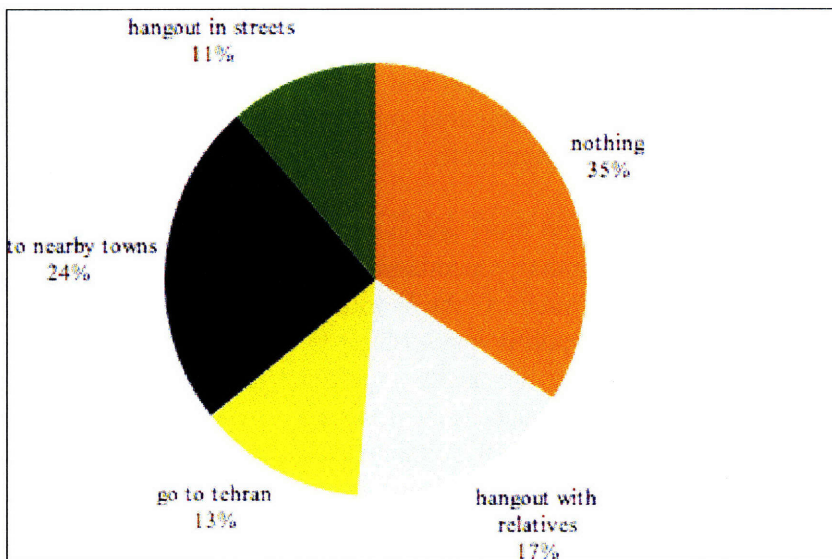
Figure 13 | Interviewees response to the question: "What do you do for leisure?"

Social ties

The community members do not interact and mix except with the social and ethnic groups to which they belong. Thirty five percent of residents have mentioned some sort of a relationship with their neighbors while thirty two percent have no relationship with neighbors and the rest thirty three percent only greet neighbors occasionally.

As mentioned in the previous chapter, there are certain ethnic groups in the community, which have strong ties. They do not intermingle with other groups. They each have their own religious groups and even for religious ceremonies they attend their own mosque. The only places that these people mix and interact is the "Workers' House" and

"Baseej". Schools are also a place for social interaction for younger generations. The groups that are smaller than others do not have much opportunity for socializing. Based on the surveys, 15 percent of the community members do not have any relatives in the area and thus they do not have any social interaction with the community.

The community does not have a public place to meet and interact. The only public space that includes all the community members is the "street". Other educational or cultural entities such as "the Workers' House" or "Baseej" or the mosques are semi-public spaces that do not socially include all the community. These are spaces owned and operated by the semi-private organizations such as NGOs and governmental institutions which are open to public at certain times and days and for specific functions.

Public spaces

Street is the major public space in Mianabad. If we define public space as a space that is open to all community members at all times and is not regulated, while at the same time allowing people to interact and integrate, then streets in Mianabad are the best example of this kind of public space. They are places for economic activity and work as a showcase for street vendors and store-owners (Figure 14). This is the only place in Mianabad that people freely socialize, talk to each other, exchange ideas and interact in a natural way. Old men gather to talk, women go shopping, store-owners get together and socialize and kids play.

All the people who were interviewed mentioned street as the only place for children to play. Amongst them, about 75 percent believe that the street is a safe place for kids to be. The street is also important place for political activity. In the triangle of streets in the center of

Mianabad, I could see many election advertisements of different candidates. This number faded when I walked towards other streets of Mianabad.
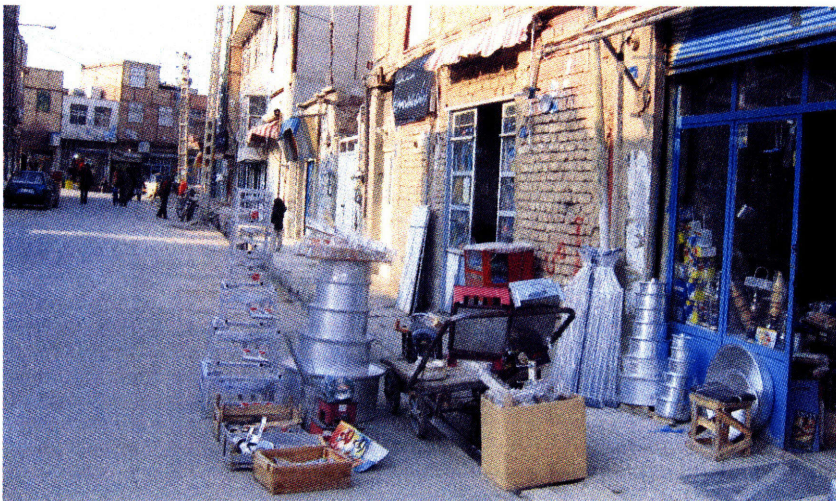

Figure 14 | Street as a public space

Figure 15 | Street as a place for economic activity

Other than street, "Baseej" and the "Workers' House" are important in facilitating people's interaction and creation of support networks. In addition, schools around the site are also a means for social development and interaction between the parents who come to pick up their children. The approximate location of all public places identified on the site is shown in figure 16.
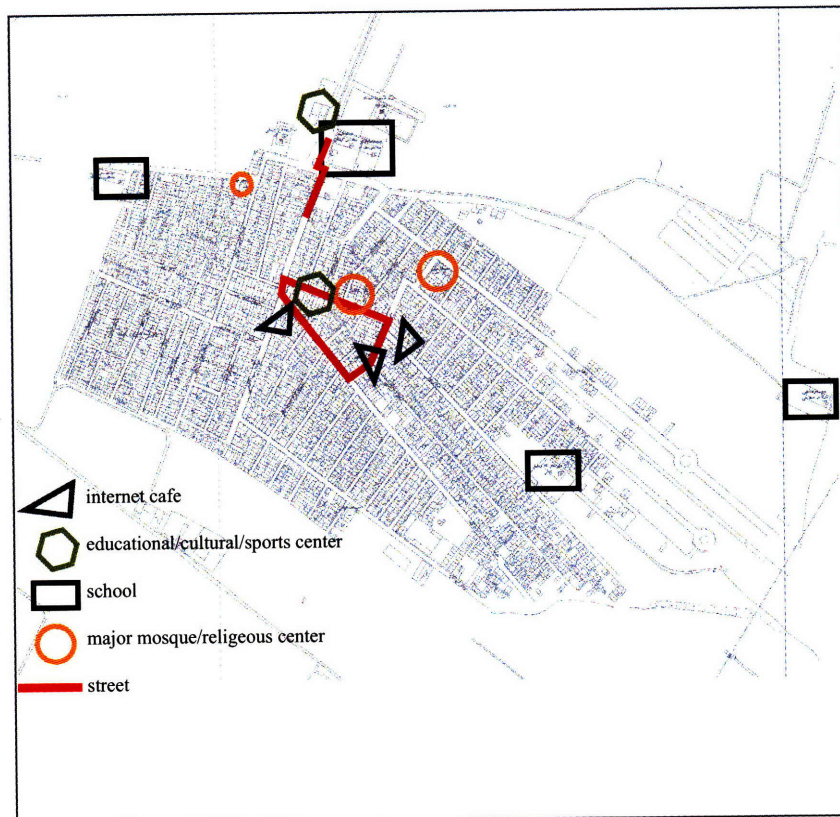

△ internet cafe

⬡ educational/cultural/sports center

▢ school

◯ major mosque/religeous center

━━ street

Figure 16 | Public Spaces in Mianabad

Types of social behavior

Activities conducted in public space of Mianabad are different in different places and different times of the day. The kind of interaction that can be a base for social empowerment and cohesion is social interaction and integration of a person in his/her community. This kind of interaction does not happen in Mianabad except for the specific places with educational and cultural functions. The rest of the public spaces in the community have less impact on the integration of individuals in public life. These public behaviors can be summarized below:

Streets | public behavior in the streets is the most natural and simple way of social connection. In his book ""Fall of the Public Man", Sennet states that "The city is a milieu in which strangers are likely to meet" and this is what happens in Mianabad's streets; The connections start naturally, over evaluating what a street vendor sells, or weather, quality of bread and similar. About thirty eight percent of the interviewees mentioned street as a place to meet new friends (Figure 17). This form of social interaction happens in only a few streets and in certain times in a day (Figure 18).

Schools | Schools are important because they are a place for the parents to socialize and get to know each other. Many people meet in front of schools to pick-up or drop-off their kids. Also in school general meetings, many parents get to know each other and socialize. Schools have a big role in creating a meeting ground for the residents. In the surveys, about 56 percent of the interviewees mentioned that they have met new people in this way since they moved to Mianabad. Amongst them, almost all are under 30 years old.

Workers' House | This is the kind of public integration that is necessary for a community to achieve social cohesion and capital. This is a place and a meeting ground for people with same interests and enthusiasm. Thus, it functions not only as an educational center but also as a place for exchanging ideas and a platform for public action. It has happened several times that people gather in Workers' House and write requests to the city council or parliament members. Workers' House is a public place, open to every member of the community that wants to be involved in the decisions about their future.

Internet cafes | They are spaces that people gather publicly to play and have fun. But the action of "socializing" often does not take place in them. People who go there are normally male teenagers and younger, so it does not involve all age groups or all genders. Thus they do not play a big role in creating social capital. They only show the potential of a big group of youth that want to be engaged in activities outside their homes.

Religious Facilities | There are several mosques and other religious entities in the neighborhood that people use. The population is very religious in general and obliged to perform their religious duties. The fact that these entities bring many people together is a positive fact in building up on social cohesion. However, each ethnic group had their own religious group and place and so the community as a whole cannot benefit from the social role of the religious entities as places for public gathering.
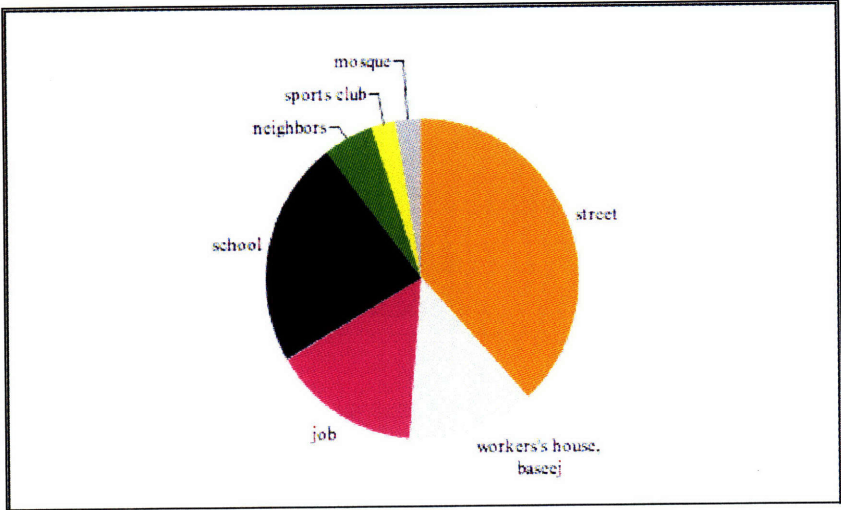
Figure 17 | Meeting ground for the people of Mianabad

Figure 18 | Active streets in different times of the day

Chapter Five

Application of Urban Agriculture to Mianabad

Summary

The project plan for Mianabad is laid out in several dimensions and similar activities are categorized in one dimension. The chapter starts with background information necessary for the project followed by the four dimensions of the project, which are: land use planning, social development, implementation strategies and creation of design tools for the community.

While the land use dimension defines the selection criteria for potential community gardens, the social development dimensions explores the ways for proper advocacy of the project along with the ways that the different social groups can be included in the process. In the implementation strategies dimension, the technical issues of an urban agriculture project have been investigated. Lastly, the fourth dimension lays out a strategy for enabling the community to set up an urban community garden in their neighborhood.

Background Information

Climate and Hydrology | Eslam-shahr is located 1165 meters above the sea level on the outskirts of Alborz mountains. On average, Eslam-shahr's weather is about 17 degrees Celsius and fluctuates between 36 and -1.5 degrees centigrade and thus it provides a good weather for agriculture activity. The humidity ranges between average of 43 percent in June, July and August to 62 percent in the wintertime. The

humidity is low but it is enough for growing crops most of the year. The rainfall is not excessive and on average in the past 30 years, Eslam-shahr has had 231 millimeters of rainfall yearly.[49]
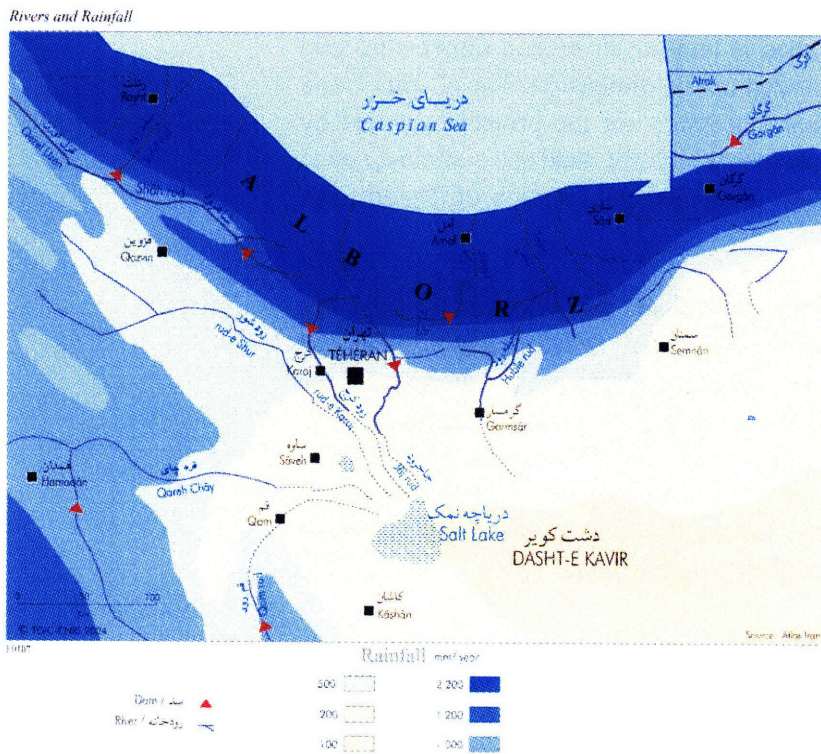

Figure 19 | Rainfall in Tehran and vicinity (Source: Tehran Municipality Website. http://www.tehran.ir/Portals/25/Image/1386/51/TehranRainfall-M-01.jpg)

There are water reservoirs all around Mianabad. (Figure 19) However there is no evidence of water reservoirs in Mianabad itself. The reason can be the conversion of Mianabad to a residential neighborhood with sanitary water. It is certain that if the Urban Agriculture project comes to reality, there will be enough water resources on the site for it. This is clear from the agricultural activity that is in progress all around Mianabad. (Figure 20)
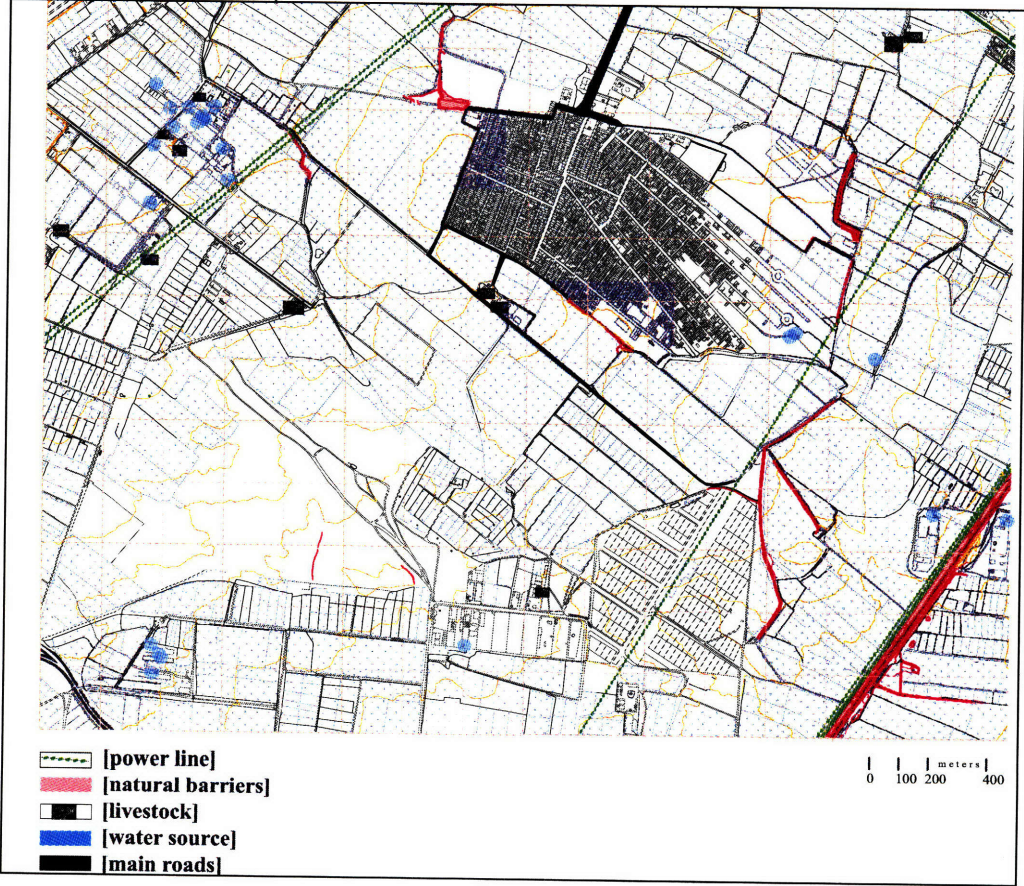

[power line]
[natural barriers]
[livestock]
[water source]
[main roads]

Figure 20 | Mianabad larger context.

Site Limitations | Mianabad is limited in directions that it can grow. There are two major power lines crossing the site on southeast and northwest corners. (Figure 19) There are also some temporary barriers (normally made with mud) to define the boundaries of farms. Other than this, Mianabad is generally surrounded by the agricultural land. Except for the immediate surroundings, which consist mostly of abandoned agricultural land, the rest of the surrounding site is under cultivation at the moment. (Figure 21)
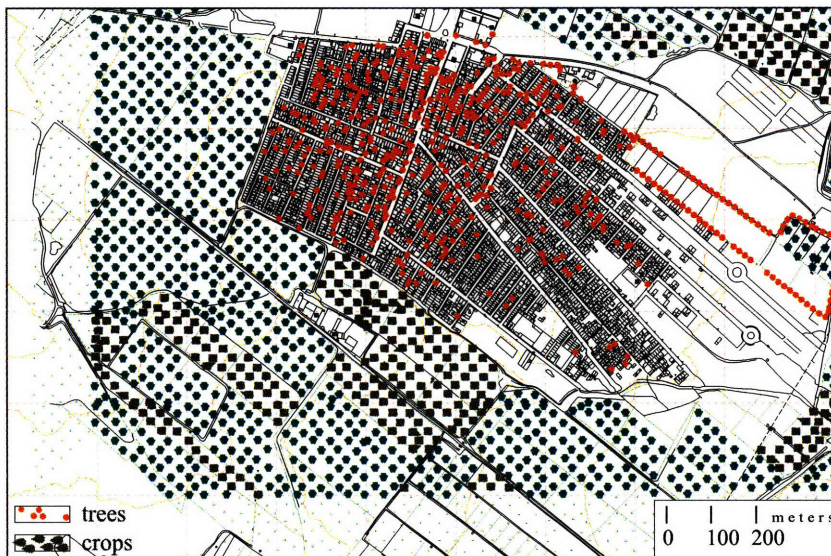

Figure 21 | Agriculture around Mianabad (Image by the author based on the information from Eslam-shahr municipality)

Ownership of the land | The land in Mianabad is owned and managed by the government and so can be leased as other pieces of land is leased in the area. The map shows the nearby land that is under cultivation by different individuals. It also shows the agriculture activity in progress at the moment with different types of produce (Figure 20). Allocation of land will be even easier than the current situation since the land will be allocated to a public activity. In interviews with city council members and the deputy mayor of Eslam-shahr, they all confirmed that the governmental organization responsible for the land in Mianabad is willing to work with these institutions in making public facilities.[50] This is how the land in the entrance of Mianabad, which is planned to become a cultural center, was given to the city by the government.

While talking to the city officials I noticed there were plans for planting trees around the sites so they can prevent the new residents from building more houses and to stop the expansion of this community.[51] It was implied that the ownership of the land is not an issue and that it is already negotiated to use the land for planting trees. The fact that the nearby land is also used by the farmers and that the envisioned site will be bound by agriculture activity will allow more interaction between neighborhoods and people and will allow for exchange of knowledge between the farmers and community members.

Existing roads/connections | The site is connected to Eslam-shahr through the main road that leads to Mianabad (Figure 19). This is the major connection to Mianabad. The rest of the roads are mostly local and some are not even covered by asphalt. This has made Mianabad an isolated place in the middle of agricultural land, which does not interact with nearby towns and cities and does not use their resources. In later phases, when economic activity in the farms became more and more important, there are a few roads that can be considered in becoming the major transportation routes. In this respect, the southern

edge of the site is particularly important.

Dimension 1 | Land Use Planning

Proper selection of gardens plays a major role in success of urban agriculture in Mianabad. Selection criteria included location, access, engaged groups and proper connection to the rest of the public space network. These can be summarized below:

- *Proximity to schools and educational institutions* | As mentioned in previous sections, school children can be a big support to urban agriculture project in Mianabad. If this is integrated in their schoolwork and as a public service activity, students can be the first generation of urban farmers of Mianabad. The first project (pilot project) was chosen based on its prime location in the entrance of the neighborhood. Based on their location, five schools were chosen for the phases. Three of these schools are located in the entrance of the site, one is in the center of Mianabad and one is on the far northeast corner of the site.

- *Creation of Neighborhood watchdogs* | The location of gardens has been chosen so that the residents can have the role of a watchdog. All the projects are chosen so that they are in close proximity of the residential areas. This has two benefits; it will prevent potential crime or theft and also will become a public space for the neighborhood and, as such, a means for engagement of the society in the urban farming project.

- *Creation of a public-space network* | Special attention was given to the network that these farms will create. The fact that these are scattered all around the neighborhood is a means to create a flow

of people in different times of day which will add to the flow already existing during morning and afternoon when parents pick up their kids from school.

-       *Considering the direction of growth* | One major criterion in choosing the potential farms is the neighborhood's direction of growth. Based on field observations and interviews with the real-estate agents, I believe that the neighborhood is growing towards east and southeast (Figure 21). It is clear that the new migrants are building their homes in this direction since there are new constructions and residents from lower income groups are located more in this part.

Figure 22 | Predicted growth direction of Mianabad

For general land use planning, it is useful to know that responsible institutions are looking for ways to prevent new migrant workers from moving to the neighborhood. Urban agriculture can be a tool for preserving neighborhood boundaries and preventing newcomers from migrating to this site. The existing vacant land should be considered as growth direction for the neighborhood. (Figure 21) Position of power lines and agriculture land that is under cultivation is a good reason that the neighborhood will not continue its growth towards other directions.

The location of the gardens should be determined based on the determined future growth pattern of the neighborhood. The growth predicted for Mianabad is based on the current land parcels that people have chosen. If we assume that they will continue choosing the same land parcel sizes (Figure 22) then we can predict the growth pattern of the neighborhood. This will be useful in locating the garden locations on the future periphery of the site, bounding the future residences (Appendix 4).

Figure 23 | Location of future gardens

Dimension 2 | Social Development

Urban Agriculture is a means to create social development. Using Mianabad as a case study, this thesis demonstrates how urban agriculture can be used as a tool for creating social integration and community interaction. Urban Agriculture is a new concept in Iran and the social atmosphere of an Iranian informal settlement should be analyzed properly. In this dimension, I have categorized the following items to be studied:

Targeted Groups | The group that will be starting the first urban agriculture project is very important. Depending on the dimensions of the project, several age and gender groups can be targeted for the pilot project. For the land preparation and the necessary technical education, the targeted group should be the ones who have the motivation and necessary time to conduct the agriculture activity. This group should be motivated, with enough incentive to start the pilot project.

In my site visits, as mentioned in Chapter three, I visited the "baseej" group, which is an organized group of housewives being trained for religious and ideological matters. While it will be hard to argue that the "baseej" group will help in this project, it is clear that a big potential for this neighborhood is this group of women who are in need of an entity to organize them. These are women without any financial power and enough time to start helping with the family's economy and food security. When the role of women becomes apparent in economic sustainability of the household, the society as a whole will start supporting the idea of economic empowerment of women as well.

Another targeted group is the young children and teenagers between the ages of 8 and 18. As mentioned in chapters 3 and 4, the lack of public amenities and space, has made it hard for the teenagers and

young adults to integrate and interact. The only places that they can go in the neighborhood to have a "social life" is the "Workers' House" mentioned before. The youth just spend time in the streets, doing nothing but talking, only to their peers, or going to a few Internet cafes in the site which are nowhere for people to interact.

Existence of several schools in the neighborhood makes it easier to organize the youth. Integration of this project in the school schedule as a "community service" requirement or even "exercise" or "science" will help the project melt easier in the context of the community. The other positive aspect of this is that the youth can be the best advocate of the project in the community since they are connected to families and can lobby and advocate for the project. This, plus the better learning power of kids in school will make them the best candidates for the start of the pilot project.

My assumption is that after the start of the pilot project, if implemented correctly, the men of the neighborhood will be attracted and the next phase, which is a "community" project, will start. This is the phase that the whole community will start taking pride in their neighborhood and will start coordination and collaboration, which is the main goal of this project after all. A community working on a communal project and taking pride in it is the very basic means of social, community and economic development.

Land Allocation Strategies | As mentioned in the previous chapter, the land that will be used, is under the rule of waqf and is owned and managed by the government. Thus there will be no real title allocation involved.

There are two options for the land title allocation: allotment gardens and community gardens. Allotment gardens are normally a big piece

of land cultivated by a group of people while community gardens are small separated pieces of land that are allocated to a family or an individual.[52] At first glance, it seems that "allotment" is a better concept than "community gardens" due to the social and cultural specifications of Iranian communities, which makes "personal boundaries" a very important concept. However since "community interaction" is the goal of this project, the "community garden" concept is a better option. Thus a mix of the two concepts is suggested for Mianabad.

Instead of allocation of a big piece of land to the whole community, each group of households will be allocated a smaller garden to work on it together. As mentioned before and based on surveys, there is not much collaboration with the neighbors in the community. Collaboration between neighbors is an indication of social ties and interaction, which is indeed weak in this neighborhood.

As seen in figure 24, adjacent alleys and streets are assigned to one garden. The criteria were the closeness of each group of houses to the selected garden and the ratio of the garden's surface to the area it covers. The ratio of garden to area of coverage is similar for all gardens (table 4).

site	garden 1	garden 2	garden 3	garden 4	garden 5	garden 6
area of coverage (square meters)	108439.60	39082.20	43438.10	64634.50	38176.80	77658.90
garden's surface (square meters)	31178.40	11880.10	16615.50	21859.70	14645.30	28271.00
ratio	**0.29**	**0.30**	**0.38**	**0.34**	**0.38**	**0.36**

Table 4 | The garden to coverage ratio for different gardens

Legend:
- [location of farm]
- [area served by the farm]

Map labels: [1], [2], [3], [4], [5], [6]
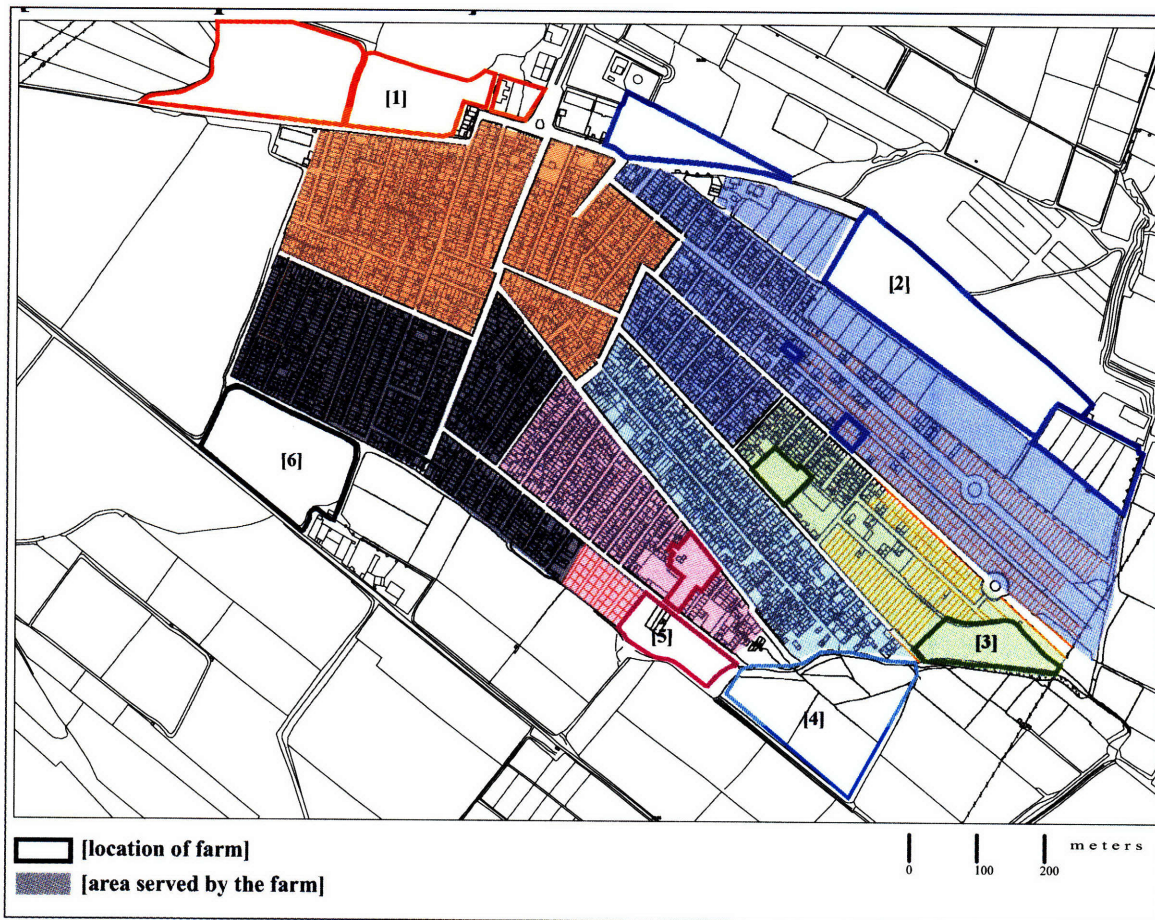
Scale: meters — 0, 100, 200

Figure 24 | Potential future farms in Mianabad and their area of coverage

Overlap of Activities | The superimposition of the activities means the proper usage of the existing cultural entities of the neighborhood. This will facilitate the integration of urban farming in the everyday life of the people of Mianabad. There should be a new simply designed network of public spaces that is accessible to all schools and provide a major meeting ground of the neighborhood. This is especially important since there is a plan for the new cultural center in the entrance of the site and also a sports complex is under construction at the same location. If all these commodities are well connected, the whole neighborhood resembles a big cultural educational center that can take advantage of all its capacities. As said previously, all these commodities can be integrated in the neighborhood's farming project and so they have to be well connected.

Building on Existing Cultural and Educational Potentials | One major issue is to reinforce the success of the project by integration of urban agriculture with other planned activities in the neighborhood and plan a whole community project on different levels. The "Workers' House" can be a good institution to collaborate with. While they offer computer-training programs, which educate many of the neighborhood's youth, they also have a computer site with 10 computers. As an example, this can be mixed with making a weblog for the neighborhood's farming project. This weblog can be used to get the message crossed to the youth in other parts of Eslam-shahr and Tehran and is a good engine for generating support for the project. Weblogs are a big phenomenon in Iran at the moment and are used by many young people to communicate their ideas and thoughts. This is probably due to the cultural and social limitations in communication methods in Iran.

Another form of this overlap is to engage the school children in the neighborhood's farming project. This can be done by integrating the

urban agriculture in school lesson plans and use their time in preparing and starting a farm. As an example, kids' art classes can be dedicated in designing a new bench for the public garden or their paintings and drawings can be used as urban art to decorate the garden. This engagement can be done in so many levels. Kids can be educated on how to use different tools and cultivation methods as well as on different forms of soil and crops.

As for integration of the neighborhood's farm project with other cultural and educational activities, it is also useful to have parallel educational programs in the newly planned neighborhood cultural center. There can be programs in art and industrial design which urban farm coordinators can use their creations in the project. The compost system can be designed and decorated in this center as well as new artistic expressions that can be used in decorating the farm. It will also be useful to have courses such as "marketing" or simple "business strategies" to educate the youth about what they can do with extra agriculture production.

Dimension 3 | Implementation Strategies

Project Timeline and Phasing | The timing of the project is important in guaranteeing its success. The first few projects should be implemented one after another to simulate the community's interest in the whole idea. The phasing should also pay attention to the fact that the entire neighborhood should be covered by these projects. The first three phases should scatter the idea around the site and the next ones should reinforce the network created by the first few (Figure 24).
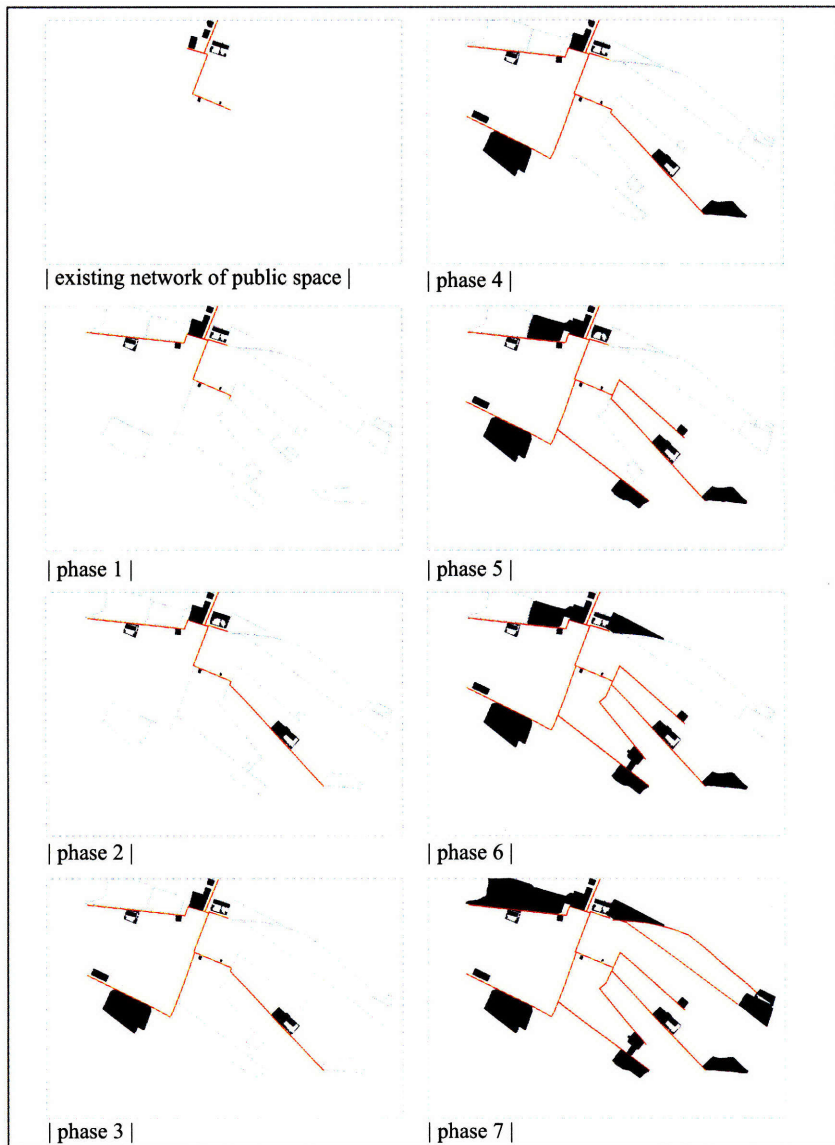
| existing network of public space |

| phase 4 |

| phase 1 |

| phase 5 |

| phase 2 |

| phase 6 |

| phase 3 |

| phase 7 |

Figure 25 | Phasing diagram of urban agriculture

Types of Crops | At the moment, Eslam-shahr is one of most agriculturally active towns in the province of Tehran. Most crops have a relatively good yield. Currently there exists about 20,000 hectares of prime agricultural land but only 13,000 hectares of it is under cultivation. There are four rivers (Karaj, Kan, Shachay, Siab) and six qanats (streams of underground water) along with 253 deep and semi-deep wells in Eslam-shahr that provide the agriculture activity with water. There is also a recently built canal, which provides even more agriculture water.[53] Of this 13,000 hectares, 3200 hectares is allocated to barley, 3,000 hectares to corn, 1,600 hectares to wheat, 1,500 hectares to alfalfa, and 2,000 hectares to herbs and vegetables. (Figure 25)

There is also a big potential of growing plants, flowers and medical herbs. At the moment Eslam-shahr produces about 60,000 plants and 700,000 flowers each year.[54] Statistics show that in the province of Tehran there are about 497 hectares of indoor greenhouses, which is the largest number in the country,[55] and many of these greenhouses are located in Eslam-shahr. Mianabad can use this as a strategy when it is hard to grow outside due to the weather conditions. With designing simple tent structures, a full year-round agriculture activity will be possible.

For the project sustainability and also to maintain a better public space that is the initial purpose of the project, the proper selection of crops is a mix of all types so the visual joy of the place can also be maintained. The food production aspect of urban farming is the secondary purpose. Therefore, a mixture of flowers, plants and medical herbs with crops such as wheat and barley and vegetables is suggested.
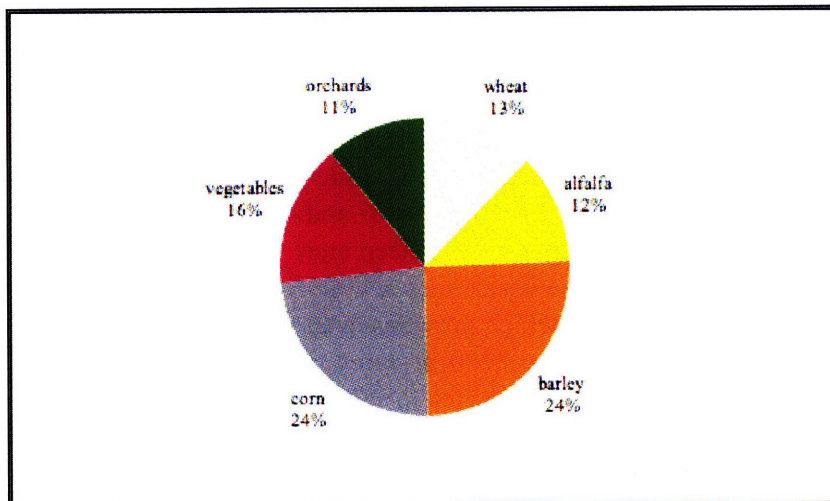
Figure 26 | Percentage of different agricultural produce in Eslam-shahr (Graph by the author based on the information in Ketab-e Eslam-shahr)

Permaculture | The suggested agriculture method for this project is "permaculture". According to the "Permaculture Institute" permaculture is "an ecological design system for sustainability in all aspects of human endeavor. It teaches us how build natural homes, grow our own food, restore diminished landscapes and ecosystems, catch rainwater, build communities and much more."[56] It is a concept started with agriculture production ideas but then was extended to all aspects of human life and sustainability.

Permaculture is based on three ethical rules: care for the earth, care for the people and recycling every possible item.[57] It is an opposition to the temporary, harmful culture of petroleum-based agriculture, which destroys the natural world and communities, while ignoring future generations.

Since one of the major permaculture basics is to establish a plant system for our own use on the least amount of land we can use for our existence, it can be a good strategy for the urban areas and especially dense urban fabrics where the available vacant land is hard to find. For Mianabad, this system works perfectly since it will let the urban farmers produce the maximum amount of food while it contributes to the soil system and natural ecosystem.

The basic design element of urban permaculture is to layer or stack the different trees, flowers and crops. The layers are as follows:[58]

- The canopy
- Low tree layer (dwarf fruit trees)
- Shrubs
- Herbaceous
- Rhizosphere (root crops)
- Soil Surface (cover crops)
- Vertical Layer (climbers, vines)

The layering system has two visual benefits; it can create a system that has different elevations and thus provide the people with shades, alternative scenery and necessary tools for growing lower crops (Figure27), and also, the different layers each have an agricultural benefit for the whole gardening system (Figure 26).

On the other hand, one of the key issues of the permaculture design is to create useful connections between components in the garden. Also key to the permacultural design model is that useful connections are made between components in the garden. This connection is between the sun, plants, soil, insects and their relationship with the landscape and humans.

One other innovation in permaculture idea is creation of a land use

that has multiple benefits. These are the efficient use of the energy, the use of the crops for building up on soil and use of the rich soil to create good produce. Mollison, one of the creators of permaculture concept, states in 1988, "It is not the number of diverse things in a design that leads to stability, it is the number of beneficial connections between these components".
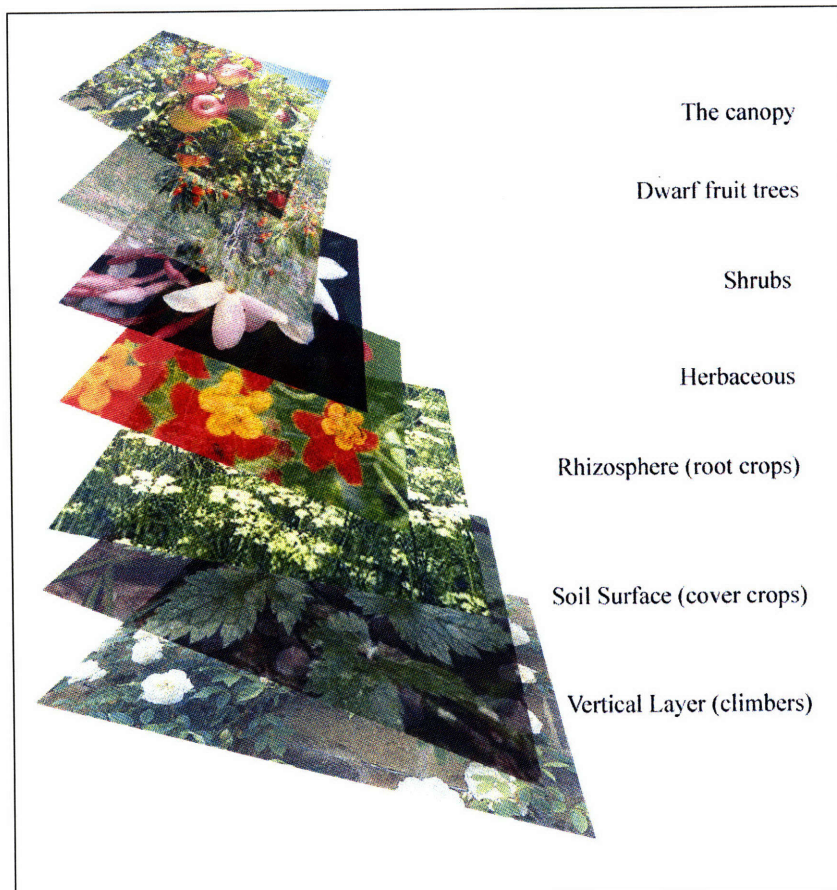

The canopy

Dwarf fruit trees

Shrubs

Herbaceous

Rhizosphere (root crops)

Soil Surface (cover crops)

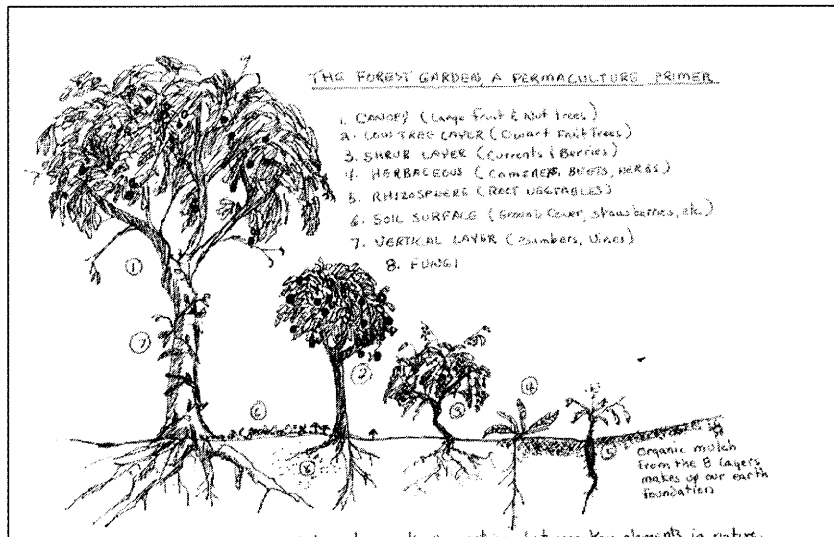Vertical Layer (climbers)

Figure 27 | Permaculture textures

Figure 28 | Permaculture layers (Source www.livegreenlivesmart.org)

Types of Compost | The transformation of organic material through decomposition into a soil-like material is called compost. This process, which occurs continually in nature, happens through using invertebrates (insects and earthworms), and microorganisms (bacteria and fungi). Composting is used as a soil conditioner in agriculture, landscaping and horticulture.

For residences of urban areas, composting can be done using variety of systems. Compost bins can be constructed at home in an easy way or be purchased. They can be as simple as four metal stakes positioned in the ground and wrapped with chicken wire. There may be different composting methods employed but the principles and purpose remain the same.[59]

The easiest way to recycle food wastes, which is ideal for people who

do not have an outdoor compost pile is vermicomposting or worm composting. It is done with "red worms" (Eisenia foetida) that survive at temperatures between 50 and 70 degrees Fahrenheit and can be kept indoor at home, school, or the office. Worms process food quickly and transform food wastes into nutrient-rich "castings." Worm castings are an excellent fertilizer additive for gardens or potted plants.

Almost everything that once was alive can be decomposed using compost bins. Grass clippings, ground-up leaves, vegetable peelings, egg shells, pine needles, wood ashes, seaweed, hair clippings, coffee grounds and tea bags are all excellent ingredients for your homemade compost.[60] Human waste, any kind of meat products and diseased plants are not useable for compost. The best option is to have a variety of ingredients in a compost bin since it will decompose faster and will maintain a higher internal temperature.

Composting is easy to do. It is not a time-consuming activity and can be made as quickly as one wants. The only thing that needs to be done while the compost is growing is to turn it twice a week with a pitchfork and keep it damp.[61] This will help the organisms break down faster which will create a heat in the middle of the pile.

The compost system suggested for Mianabad is the simplest way of composting the natural waste. It is basically a compost bin that can be located in front of each house (if it is not covered by asphalt) or in the garden (in case the road is covered by asphalt). A container of 250 liters would be suitable for the houses in Mianabad with 4 – 5 households.

It would be a good idea to place the compost bin on earth to allow the worms enter from underneath which is useful for air circulation through the material. The bins should also be elevated from the ground to allow this. sunlight will be useful in decomposing the

waste while the compost bin should be kept away from heavy rain. The best time to start a compost bin is spring since the compost process slows down in the winter.

Potential to Serve a Bigger Market | Comparing to other cities and towns in Tehran province, Eslam-shahr as mentioned before, is quite active in agriculture production. There is a big potential for Mianabad to become a center for agricultural produce and farmers' market in the future. At the moment, in Eslam-shahr not far from the road that connects to Mianabad, a farmers market has shaped spontaneously which is very vibrant and active during the day (Figure 29). While talking to the city officials, however I noticed that the city is planning on moving the farmers market since it has created a traffic problem. Mianabad can be a place that this farmers market moves to.

Figure 29 | Farmers' market in Mianabad

Hierarchy of Involved Institutions | The planning system in Iran is very top-down. The municipalities and the city governments are all parts of big regional plans that are designed based on the central government's objectives and priorities. There is not any public involvement in decision-making and implementation. This is why so many of the governmental plans do not get implemented properly since they do not have the community support and engagement. The communities on the other hand are extremely dependent on the municipal government and do not take responsibilities for their destiny and welfare.

One of the major purposes of this thesis was to examine ways to engage the public in decisions made for them. While it is understandable that changing a whole government's top-down approach with a thesis is impossible, there is an absolute possibility for this project to become a reality based on the vision and assumption that the people and the government officials have intention to give people more power in decision making.

Political and financial support for the agriculture project will come from the active planning institutions in the neighborhood, which are the city council and the municipality. There is a strong intention from the city officials to support this disadvantaged community with new plans. This is partially because this neighborhood is a vote-generating one and the officials know that they need the votes of this small but dense community.

At the same time, since Mianabad was not a part of Eslam-shahr until a decade ago, there is an intention to show to the community that the municipality wants to include the people in the process of planning and this is why many city officials go to the religious ceremonies and celebrations of the people of Mianabad to show they care. There is also

a possibility that this is a part of a whole movement in the government to engage more people in the city planning system. The government is realizing that people can take a lot of responsibilities and make the work easier and easier to implement.

Technical support for the urban agriculture project in Mianabad will be provided by the Ministry of Agriculture and the Azad University[62] at Eslam-shahr. Since Eslam-shahr is one of the agricultural poles of the Tehran province at the moment, the Ministry of Agriculture is already active in close-by areas. They have detailed information about type of soil and hydrology and the types of crops that can be cultivated.

Azad University, which is located very close to Mianabad, is a good source in providing technical support and potential volunteers. It has a big faculty of agriculture, whose faculty and students are interested in helping with projects like this. This is a good opportunity to exercise community-university partnership in Eslam-shahr and vicinity.

Social support for this project will come from the two active NGOs in the neighborhood: Baseej and the Workers' House. To guarantee the success of such projects, there is a need for a strong volunteer body. In this case, most of the volunteers will be generated from the community itself with the help of the two NGOs. It should also be possible to have volunteers with agricultural expertise who are nearby farmers or the university students.

Later, when the project is up and running, there will be a community trained group that will take on the project and train the next generation and this is how the sustainability of the project is envisioned.
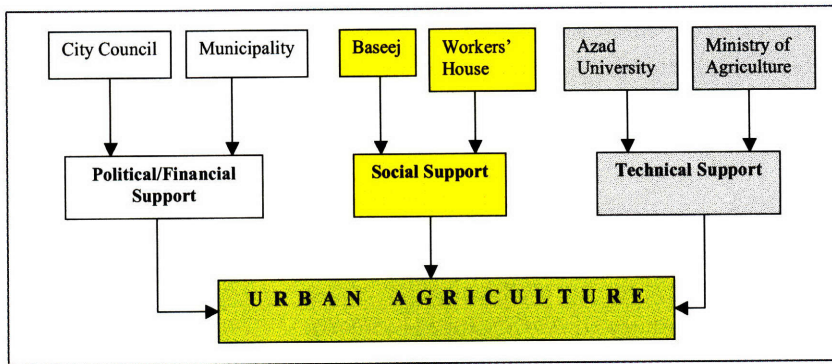
Figure 30 | Diagram showing institutions involved in Mianabad agriculture project

Dimension 4 | Toolbox Design

The author was hesitant to approach this project from a top-down vision since the enabling of the residents is sought by encouraging them to decision making. This is why the design component of this project is only focused on the possibility of designing some tools for the community to design for themselves. After defining possible locations for the farms, one project is selected to design fully as an example of what can be done in similar projects.

The design process for communities such as Mianabad should include defining simple elements that can be used by the people to design for themselves. These elements should be defined carefully to create zones of interaction between people. Community members will have to interact over necessary matters such as using the resources to achieve political capital and social cohesion. While the designer will facilitate the process of community development, he/she will use the design as

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a tool for the community to practice decision-making. The concept of community development through collective community action has been explained in the previous chapters.

The design process for this project started with defining necessary tools for the agriculture activity. Based on this study, I defined design elements that can be used on all sites of urban agriculture throughout the site. These elements include:

- A grid
- Separators
- Fence
- Source of water
- Source of compost
- A shared storage area
- A communal space

These elements are necessary for creating an urban farm in the city (Figure 31). The location and position of them on the site should be defined and decided for, by the community while facilitating by the designer and the team. Below, there are definitions of each of the elements:

Grid | Five meters by five meters is the smallest possible lot on the garden. Each 5 by 5 meter grid can be cultivated by at least 2 people. Depending on the people's age and availability this number can increase to 5 people. The grid is a flexible way for the community members to define their lots.

There should be a rule on how many lots each agricultural produce should occupy. As an example, strawberries do not require much space,

thus one lot (or more) can be allocated to producing strawberries. But potatoes require more space to be economically viable to produce, thus the land allocated to them should be at least 3 lots or 75 square meters.

If the guidelines are given to the community members, they should be able to define the lots where they want to work. It is an easy system that can be demonstrated with a simple model or a drawing (Figure 31)

Separators | When the community defines the lots, they should separate each boundary. This can be easily done by positioning sticks or stones on the corners of each lot. Each lot should allow approximately 25 centimeters on each side to be a part of the small walkway that will be created as people walk over the garden to get to their lots.

Fence | The whole garden should be fenced out. This is to protect the garden from theft or destruction. It will also help the urban gardeners to feel ownership towards the land that they are cultivating.

Source of water | Water sources are the faucets that bring the underground water or the water from wells to the earth surface. The gardeners will be provided a hose that is 15 meters long and this is the longest hose that can still function with the water pressure in Mianabad. The fact that each hose is 15 meters long allows each lot to be in a 15-meter radius of one water source. Some lots will be located in two water source zones.

Source of compost | Compost storage zones are not as frequently used as water sources. they can cover a zone of 25-meter radius. In other words, each compost storing area can be used by the lots that are located in its 25-meter radius.

Shared storage area | In each urban garden, there should be a simple construction such as a prefabricated cabin that is used as a storage area. this is a necessary element that will make the urban gardeners interact and mix since they all have to use one same area, which contains communal agricultural tools such as buckets and shovels.

Communal space | Communal space in an urban farm is what makes it a "community space". This is an area with open-ended usage that can act as the urban street in the neighborhood. It is not regulated and it belongs to the whole community. People can come and use it as a recreational space while street vendors sell their material or the produce of the urban garden is also being sold.
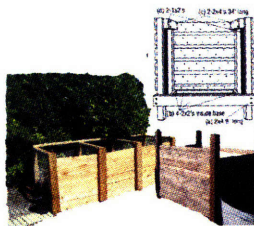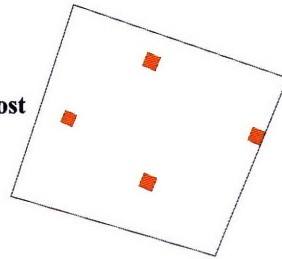
[design elements]
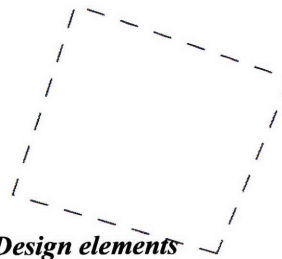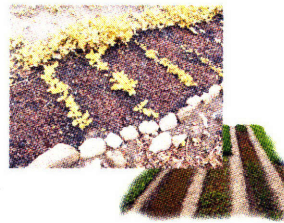
[1] grid
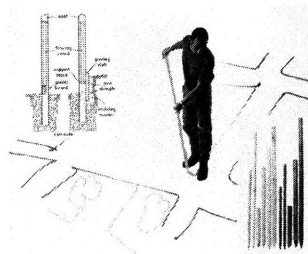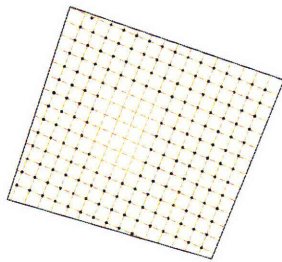
[2] water
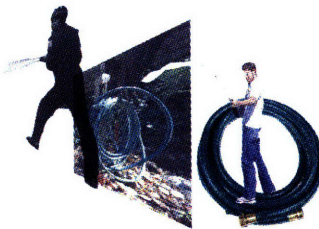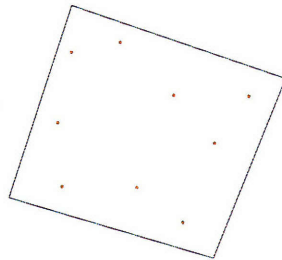
[3] compost

[4] fence

Figure 31 | Design elements

[5] separators
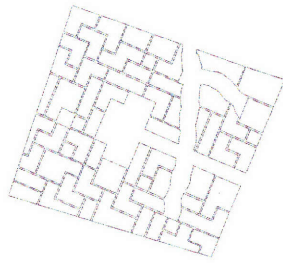
[6] resource center
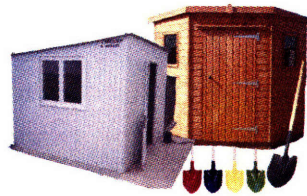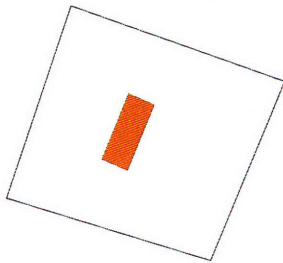
[7] communal space
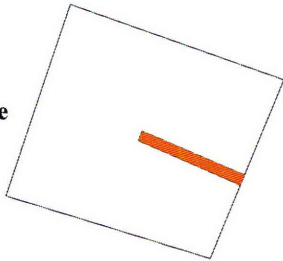
Figure 31 | Design elements (continued)

A Sample Designed Lot

To study the application of this system, I chose the first pilot project as an experiment and used this system to create an urban garden. The location of this pilot project was chosen based on its proximity to schools and religious institutions. It is also of the entrance of Mianabad because of its importance (Figure 31). Based on the surveys, around 50 percent of the interviewees want the new cultural facility to be built in this location.

After choosing the site's location, the grid was created to facilitate the lot allocation. The grid was chosen so that it is perpendicular to the main side of the urban garden (Figure 32). The communal space and walkway was also chosen so that they are close to the main road.
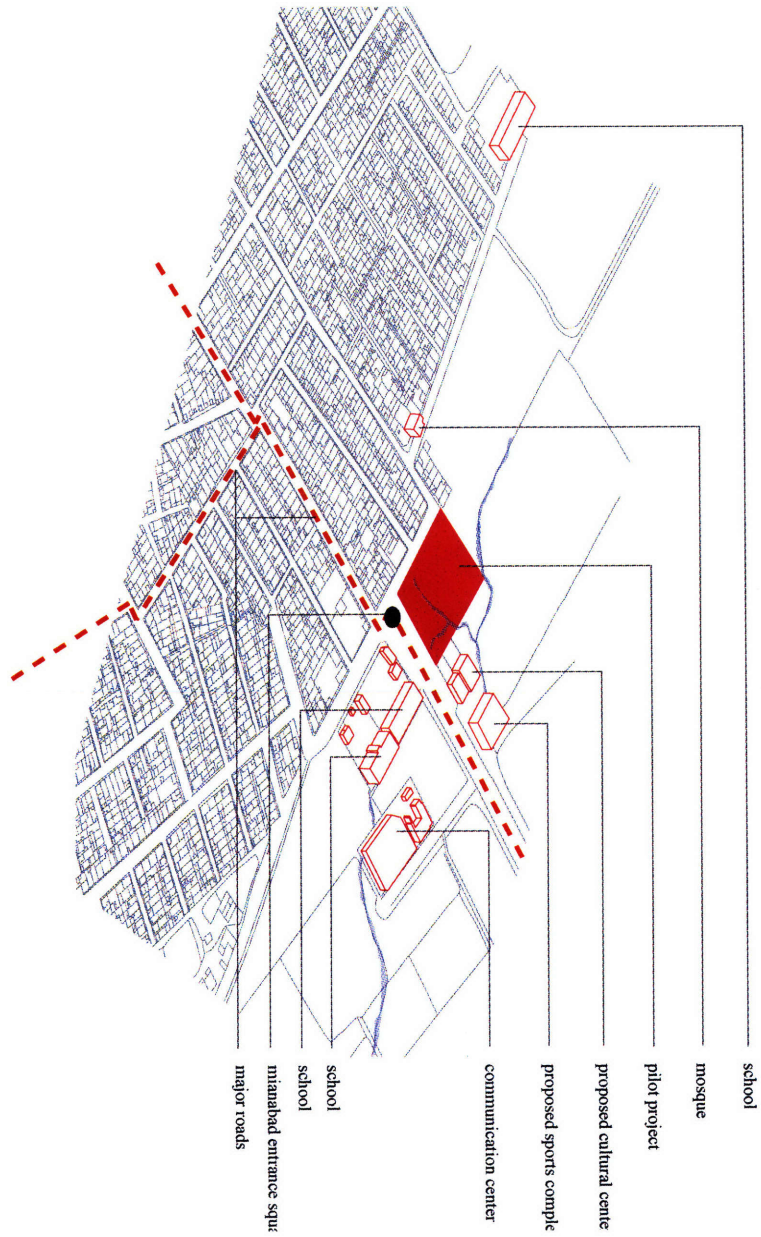
major roads
mianabad entrance squ
school
school
communication center
proposed sports comple
proposed cultural cente
pilot project
mosque
school

[2] water
[3] compost
[4] fence
[5] separators
[6] resource center
[7] communal space

meters
0   10   20   40

Figure 33 | Plan showing different elements of an urban garden

The location of the storage was chosen based on the concept of centrality and the fact that people will have to come to use this space from all the lots around the garden. This will create a central interaction zone that overlaps with other zones created on the site (Figure 33).

The water sources and the compost locations are chosen with the simple method of fitting the least number of sources possible given the required radii. For the given site, 9 water sources and 4 compost collection areas were deemed sufficient." (Figure 32). The plan shown here, is an example and the lots can be defined in any other possible configuration (Figure 34)

Interaction zones are created simply by using the different defined design elements. These zones are means for social interaction between different groups: urban gardeners, gardeners and technical support groups, gardeners and community members, community members with each other, and technical support groups and the community. Thus, the purpose of public space, which is providing the community with a meeting ground, is met.

[zone 1]
[community space]

community and the urban farmers use this zone. This zone will cover most of the site's surface since the community can go visit the gardens while farmers are at work. there is a separation between the communal areas and the allotments.

[zone 2]
[storage + resource center]

farmers can store their tools and equipment in this designated area. There is no need for a complex construction. something as simple as a prefab cabin will also work.

[zone 3]
[water resource]

water resource are scattered around the site. Each water facet can irrigate lots in a 15 meter diameter. thus for this site, nine irrigation sources were sufficient.

[zone 4]
[compost area]

compost areas can cover areas within 25 meter diameter. while farmers bring the made compost to the site they also use it for cultivation.
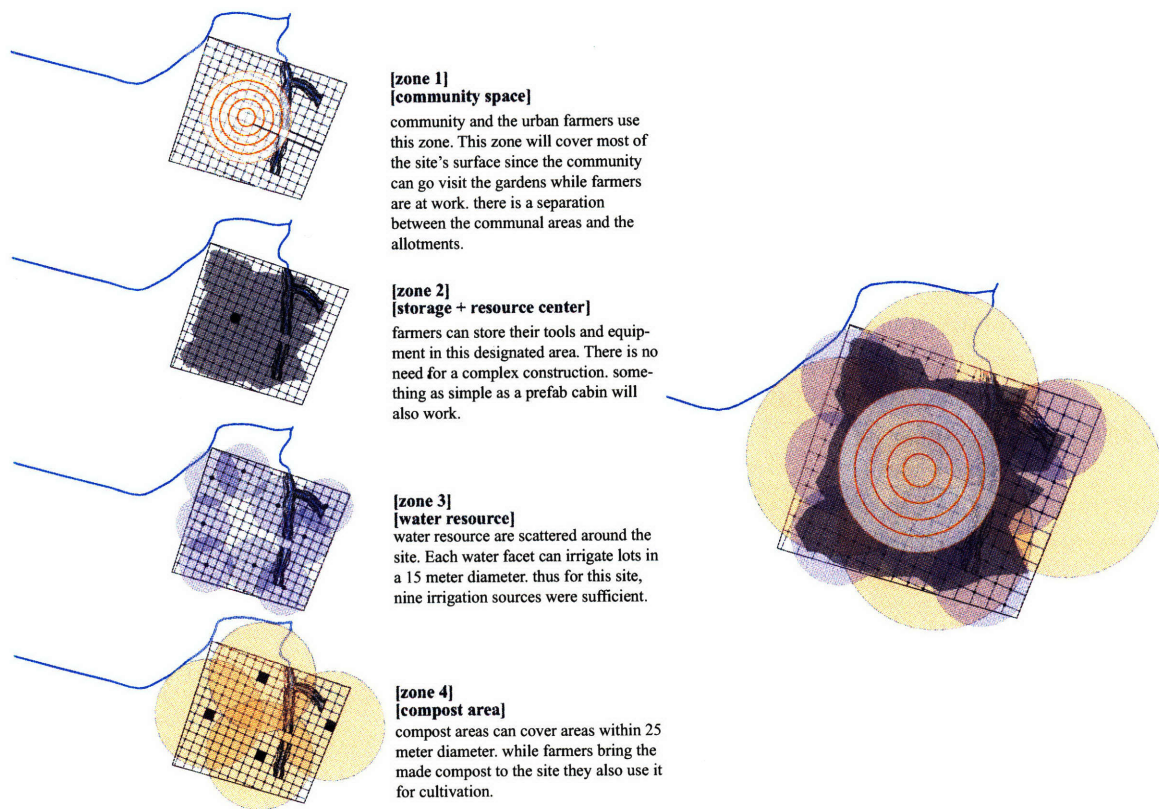
Figure 34 | Interaction zones created by the design elements
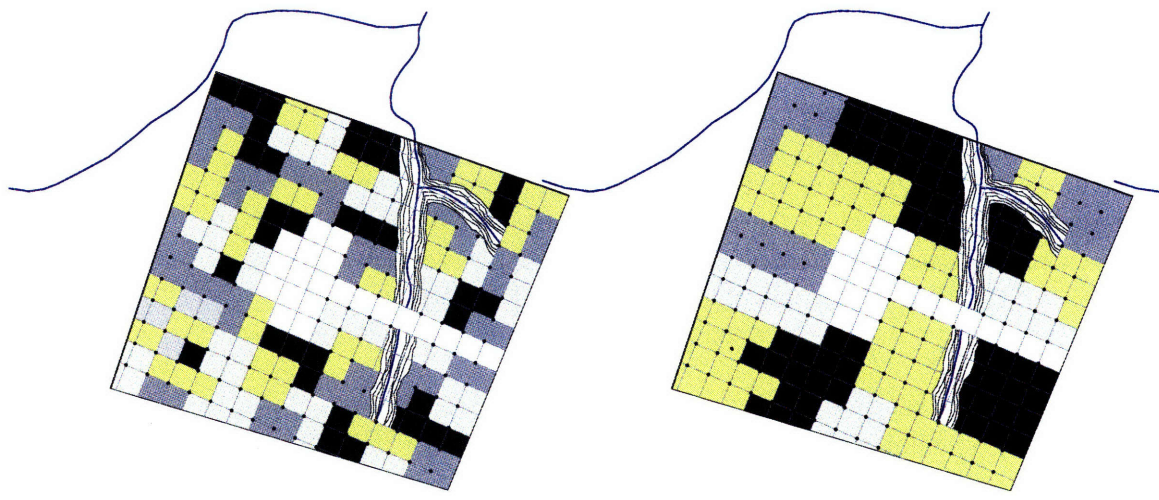
[configuration 1]

[configuration 2]
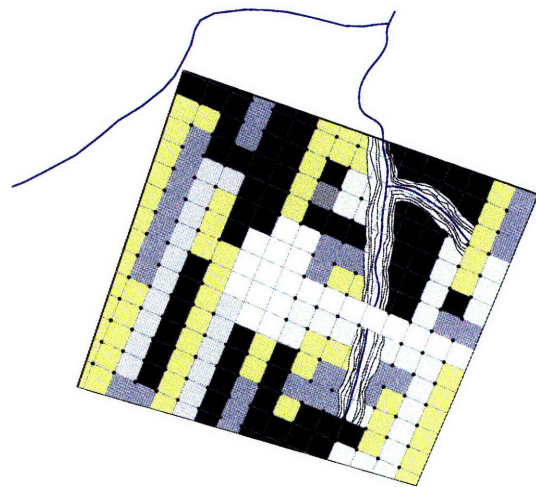
[configuration 3]

Figure 35 | Different possible configuration

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A Sample Storyline

As the pilot project starts with engagement of school children, the experts trace the grid on the ground. Then the students start defining their lots based on the type of produce they want to cultivate. The next step is to separate each lot by positioning wooden sticks or any other temporary material on the corners. While the lots are defined, the students establish the locations of necessary water sources and compost bins based on the guidelines. They also define an area for the storage and an area for the community space. After this step, the cultivation starts.

When the first pilot project starts to function and comes to the production phase, the community will start the second project and so on (Figures 35 and 36).

Figure 36 | Sample story line

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Conclusion

Background

Informal settlements in Tehran have been shaped in the southern part of the city due to shifts in economic and industrial productivi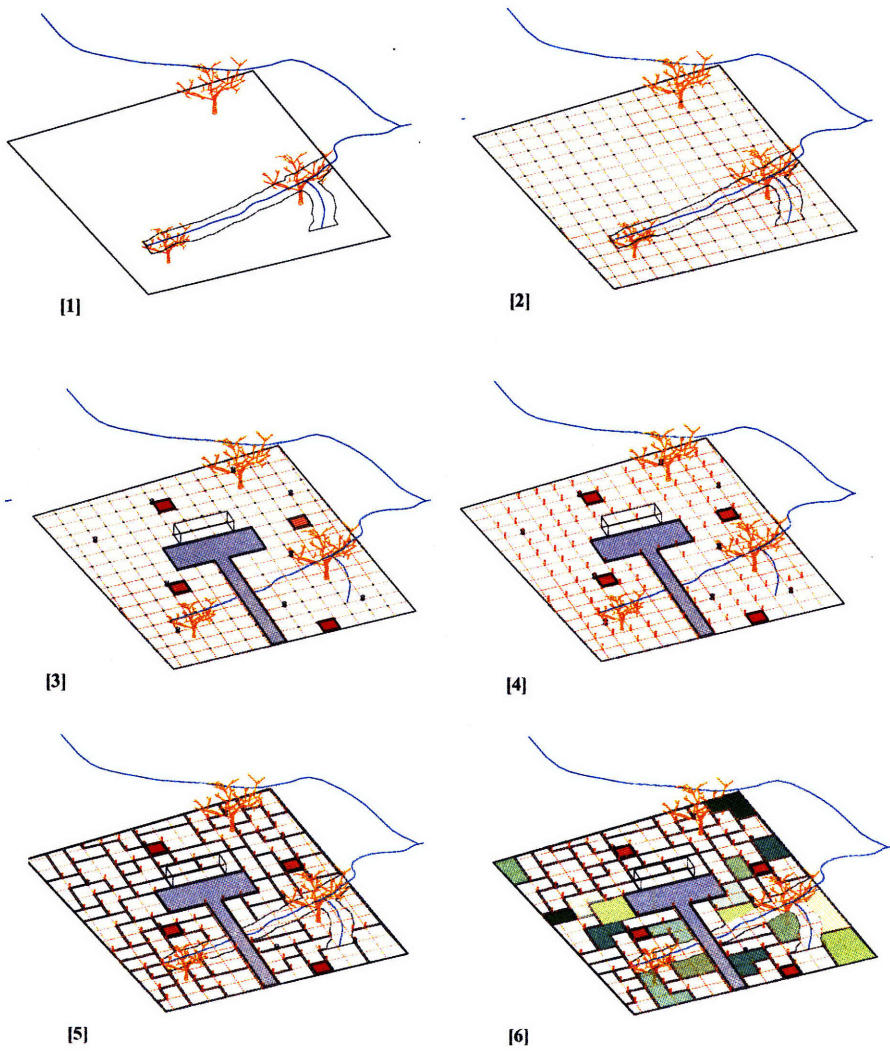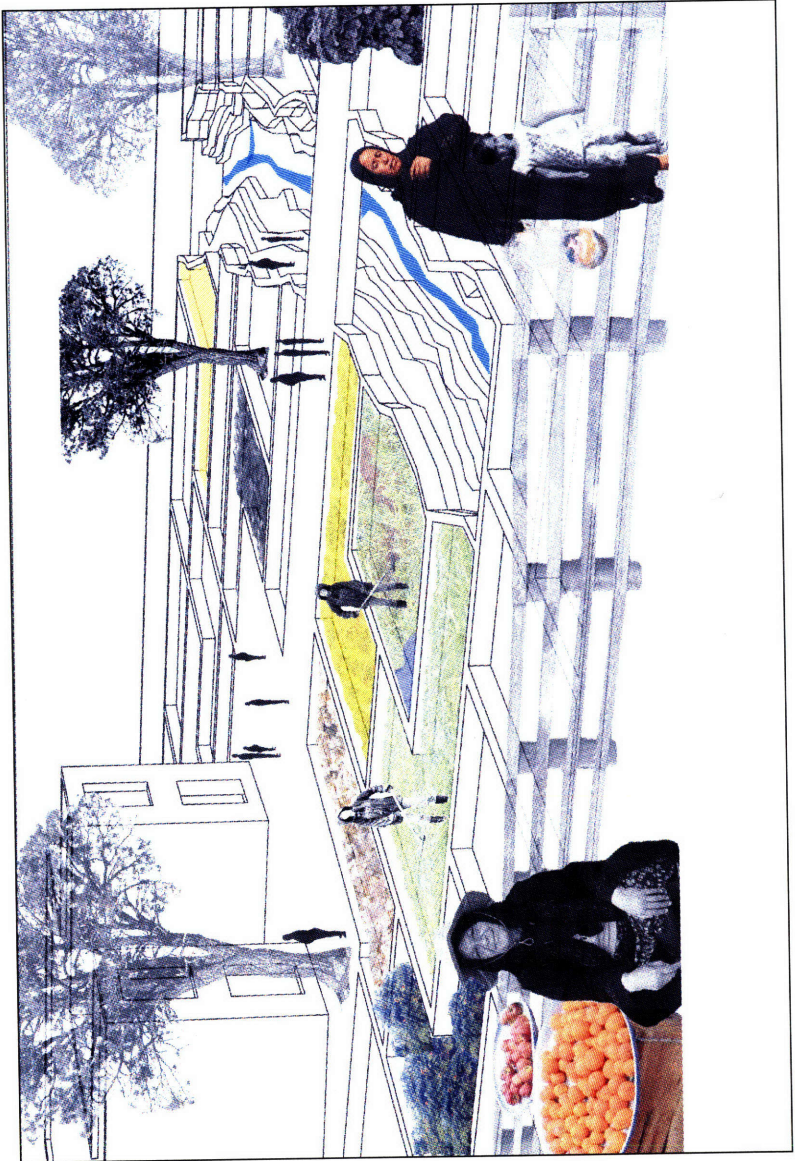ty. The settlers who illegally occupied government lands were primarily the people who were working in the industries and services in the southern parts of the Tehran province.

These informal residents on the fringe of Tehran are distinct form other similar squatter settlements and slums in the developing countries. Due to regional flows of oil money and the efforts of the new regime for equal distribution of income among the poor, these settlements do not lack basic infrastructure amenities such as water or sewerage.

The issue that exists in these settlements around Tehran is the lack of social cohesion, political capital and an identifiable urban livelihood. Over site visits and observations, and based on surveys, the author conducted an analysis of the social behavior and spaces of Mianabad. The outcome showed that there are little strong community ties and connections. It also showed that the community is heavily dependent on the local government to receive services.

This type of reliance on the local government is a common trend in Iran and it stems from a top-down approach to both planning and governance. The communities, urban or rural, are completely dependent on the local governments rather than trying to remedy the problems themselves. Specifically, residents of Mianabad lack the necessary political capital to jump-start their own prosperity and destiny. The residents need a sense of leadership and an outlet for this voice to become a vibrant urban community, which in turn demands

that the local government and its members are not socially immobile.

The Iranian town planning has historically utilized a top-down approach to the task of decision making. Until 1999, even the mayor was chosen directly by the regime's Secretary of Interior. Since then, and after the establishment of city councils in Iran, the regime acknowledges the fact that for the urban policies to be implemented successfully, there is need for people's input and inclusion. Mayors are now elected by the votes of the city council members, which signifies a major shift in the government's vision of governance.

In this political atmosphere, and in keeping with the methods of urban acupuncture, the author decided to experiment with strategies for cultivation of decision-making and empowerment by engaging the public in a collective productive action. The need for public open space that can also serve as a meeting ground for the community members resulted in the idea of proposing an urban landscape that can engage the community in a productive action. This is called community-based urban agriculture.

Potential Outcomes

A community-based urban agriculture, as explored in this thesis, has several potential outcomes. It is expected that this will result in the creation of healthy natural food and food security, entrepreneurship, and a stronger community identity and perception. (Lyson, 2004). In summary, this thesis explored ways for social inclusion and cohesion through establishment of urban gardens throughout Mianabad. There are several expected beneficial outcomes of this project.

One potential benefit is the creation and management of green open

space, which is also productive. Mianabad lacks the necessary resources for creating green open space that is open to public. This is due to the lack of financial resources in the neighborhood and the fact that the government cannot generate any tax money from this particular neighborhood.

Another positive outcome of this proposed project is providing the community, particularly the targeted groups of women and school-age children, with opportunities of individual development. This is envisioned by encouraging community decision-making from very first stages of the project. Involving people in the process, which can happen through both advocacy and education, will create a sense of ownership in this project.

This project also aimed to strengthening community ties by involving people in collective community action. It is expected that this collective food production will foster pride and identification within the local community while encouraging people to participate in neighborhood affairs.

Methodology

The approach that this thesis took to set up the urban agriculture project was from the ground up. The hypothesis was that if the participants share a common piece of land and create a framework for sharing this space over time, they would reinforce their community's social and political capital.

The role of the architect and planner in this process is defined as a facilitator. Designers and urban planners generate a framework in which participants choose their lots confidently and in positive interaction with others. Since one expected outcome of this process is

to practice decision-making and positive interaction with community members, the designer should have a role of a "listener" rather than the "teller," and of a "catalyst" rather than "director".

It is essential to have inclusion of the gardeners themselves in the design process. This way, one of the outcomes is the sense of ownership towards the design and the garden itself, which will result in a more sustainable product. The system must achieve design goals through empowerment rather than imposition.

The designer is also responsible for the proper integration of the community gardens in the urban scene. By analyzing the neighborhood's traffic and the existing network of public spaces, the designer creates strategies to integrate the new community gardens into the daily workings of the settlement. The location of farms within these neighborhoods is important, as it will be a place for people to gather around, interact, organize and manage communally. A successful community-based urban farming project will also form bonding and bridging networks that did not exist before.

For this reason, a set of tools was designed so the community could use them as a framework in order to interactively set up the first project and future iterations. It is expected that in the process of creating the pilot project, the participants build up on the existing social ties and connections and interact and integrate through collective decision making.

Challenges

The most challenging issue of implementing an urban agriculture project is the methods to facilitate the multi-stakeholder process.

Integration of urban gardens in the land-use planning of a neighborhood requires reaching a consensus between various stakeholders.

Different groups of stakeholders include the neighborhood and community members. Their support of the project is essential to the success of the project. The next group of stakeholders includes different levels of government including local and national governments. Municipalities in Iran are a sub-category of local governments. Different departments in municipalities, such as cultural policy and urban planning wings, can be involved in an urban agriculture project.

Other essential stakeholders in urban agriculture projects are the neighborhood groups and NGOs, grassroots organizations, as well as religious and cultural entities. Active existing social institutions should get involved to initiate the project. Educational institutions that are within or in the periphery of the neighborhood also provide crucial technical support and volunteer labor.

Other challenges involve the overarching need for proper advocacy for urban agriculture. In many cities in the world, such as Havana, there is the recognition that urban agriculture plays an essential part of the urban micro socio-economic system and a major player in the city's ecological maintenance. This recognition has resulted in changes in land-use policies in such countries. In Iran, this point has never been agreed upon and thus the country would need much more advocacy to integrate urban gardens in the city planning system.

The implementation of urban agriculture is a slow process involving many stakeholders. One of the most complex issues for the implementation of urban agriculture is the provision of necessary land. Wherever land is available in dense urban neighborhoods, urban

gardening would likely compete with other land-use needs such as housing or commercial development.

In Mianabad, it is easier to address this problem since this area is surrounded by agricultural land that is managed by the government. Because the land in Mianabad does not have great economic value, it would be easier to use it for the purpose of urban agriculture. However, the competition between urban gardens and other commercial uses of land may still exist.

Further research needed:

The issue that needs to be explored further is the question of what will happen to urban gardens if the city expands and the urban garden is located in a prime location within the city. Urban growth can create competition between different land-use policies and urban gardens. Urban gardens are often under threat of elimination by other commercial land-use policies.

One possible solution to this problem is to recognize urban agriculture as an official form of land use. This will help preserve the urban garden even when the city expands. However, particularly in Iran, where the urban planning policies are not concrete and can change with different administrations, there should be additional solutions to ensure the preservation of this agricultural land.

In Mianabad, the land that is proposed for community-based urban agriculture, is owned by the government and thus there is not an immediate threat to the project as the city expands. However, if the planners envision a more inclusive project in another part of the city, which also uses the private land, potential policies should be studied in order to preserve the urban garden through expansion.

Appendix

Appendix 1 | Short Review of Tehran's Urban History

Tehran, a metropolis of 12 million people today, was a small city in the turn of 18th century. The city, affected by economic and industrial changes to the country as a whole, has gone through major spatial changes in the past two centuries. Tehran is most changed during the reign of Naser Al-Din Shah of the Ghajar dynasty after his trips to Europe and later in Pahlavi Dynasty when the kings tried to make a modern capital city out of a 19th century village. There is a little literature about Tehran before 1500s, but it is understood that the old Tehran, named Rhaga was located about ten kilometers south of the present day city, housed lake Cheshmeh-Ali which based on archeological evidence dates back to 5000 B.C. and is one of the oldest settlements in Iran. To understand the process of rapid urbanization in Iran, which caused the formation of informal settlements around the city, this thesis starts with a brief history of Tehran and its urbanization process.

Tehran in Safavid dynasty (1501-1722)
The city in the 9th and 10th centuries had about ten to fifteen thousand inhabitants and around two thousand houses in an area about 4.5 square kilometers. This increased to around three thousand houses in 1627. The first king who paid attention to Tehran was Shah Tahmaseb (1524-1576 A.D.), who ordered a wall and a small bazaar for the city in 1553. This wall had hundred and fourteen towers and was six kilometers long. Shah Abbas (1587–1629) built the first royal palace in Tehran, which was named Chahar-bagh. Shah Soleiman (1666-1694) commissioned the construction of the Royal court in Golestan Garden, which turned to the Royal complex in later years.[1]

Tehran during Zands (1750-1794)

In 1759, Karim Khan (1750-1779), the founder of the Zand dynasty, invaded the city of Tehran and decided to move his capital to Tehran. He repaired the city wall and built watchtowers outside the city gates. After several development projects in the Royal area, in 1776, Karim Khan finally decided to move his capital to Shiraz, so he left the development of Tehran incomplete.

Tehran, the capital of Qajar (1789-1925)

In the beginning of the Qajar dynasty, Tehran occupied an area of 7.5 square kilometers and had a population of fifteen thousand people of which three thousand were soldiers. The city consisted of five districts, which were circled by the same 16th century wall. Of these five districts, two were completely residential and the others housed the royal complex, bazaar and service areas.[2]

Based on western visitors' counts, in 1811, there is a mention of six gates, thirty mosques and schools, three hundred hammams or bathhouses and one square in the south of the Royal Complex (Arg). The city's urban fabric at this time was based on the hierarchy of movement from public to private. The public passageways were main streets connecting the Arg to the gates. The rest of the movement system was alleyways and cul-de-sacs.

During Mohammad Shah (1834-1850) Tehran's growth was towards outside the city walls in the north. The position of the mountains in the north of the city which were a source for good weather and clean water, resulted in construction of many summer palaces and mansions in the northern suburbs of Tehran called Shemiran. The growth of the city from this time onward was towards northern mountains.

The first map of Tehran was published at this time by the Russian

Orientalist, Berezin, in 1852 in Moscow.[3] This map clearly shows that Tehran lacks a large-scale public open space and large-scale buildings. The only open space was the Shah Square, which was located between the Royal Complex (Arg) and the bazaar.

Tehran transformed completely during the reign of Naser al-Din Shah (1848-1896). The reason was his numerous trips to Europe and the intention to make Tehran like a European capital. The first big change was the destruction of Tehran's wall in 1870-1872. The king, in 1871, commissioned the construction of a new wall, called the Naseri Wall (Hesar-e Naseri). This wall, built by a foreign instructor of the only technical school in Tehran, was an octagon measuring 19.2 kilometers in length and had 12 gates. These gates still resemble memories in Tehranis' minds although were demolished later around 1929. [4]

The new map of Tehran, which was published in 1890, by Abdol Ghaffar (Najm al-Molk) visibly shows that the structure of the city had changed. The new European style streets cut through the old fabric of the city and the footprint of the old wall can be traced in the new streets that replaced them. In 1868, the first census of Tehran showed the population of 155,736 people, which shortly increased to 250,000 in 1890. [5]

Pahlavi Dynasty (1925-1979) and the Islamic Republic

The founder of the Pahlavi dynasty, Reza Shah (1925-1941) was the first secular king of Iran, who tried hard to give his capital a non-religious character. Tehran remained Reza Shah's capital while he chose not to use the already built Royal spaces and moved his residence to the north of the city. This caused more growth towards north.

Both Pahlavi kings tried to achieve a western model of governance and therefore many new administrative roles were created which required

new buildings to house the different activities such as ministries and offices.[6] The new constructions all took place in or around the old royal complex. At the same time new commercial institutions started to be established as the traditional trade system was yielding to the new forms of commerce and trade with more interaction with the world economy. This changed the role of the bazaar as a social, commercial and sometimes political backbone of the city[7] although even today; the bazaar still has an important role in structuring the city.

Mohammad Reza Shah (1941-1979), the son of the founder of the Pahlavi dynasty, tried to continue his father's role after Reza Shah was abdicated following the World War two and invasion of Iran by the Allies in 1941. He began to industrialize the country, which happened mostly in Tehran and increased the population considerably. This, plus the increasing oil revenue, population growth and immigration to the city led to a further expansion of the capital city, which additionally changed its shape to the metropolis it is today. The king paid attention to the shape of his capital and therefore hired consultants to develop a comprehensive Master Plan for Tehran in 1966.[8]

In 1966, Gruen, the American town planner and AbdolAziz Farmanfarmaian, the Iranian architect were commissioned to design the first Master Plan of Tehran. This Master Plan was mostly focused on new developments around Tehran in the shape of satellite towns and the expansion of highways and connection between different zones of the city.[9] They also foresaw many green western style open spaces throughout the city. This plan was the basis of all new developments in the city prior to revolution in 1979.

Gruen's plan was a strong one in many ways. As Wouter Vanstiphout mentions: "Not only did the Tehran Comprehensive Plan foresee a detailed management of the typologies, the services, the public facilities

and especially densities of the new city, it also carefully choreographed its growth. The city was given growth boundaries that were expanded every five years, in order to maintain its coherence every step of the way."[10] These five-year boundaries never materialized. The first five-year growth boundary, which foresaw the city, to expand to 230 square kilometers remained the only legal boundary of the city until 1991. This caused the land prices to increase rapidly and the squatters to invade the land outside the city boundaries and build houses illegally. The major problem with Gruen's plan was the incorrect estimation of population growth and the incorrect estimation of the city boundaries. The final estimation of the city's surface was 630 square kilometers, which is less than the city's boundaries today.

After the 1979 revolution, which resulted in establishment of the Islamic Republic of Iran, the shape and structure of the city did not change much; the growth continued towards north and west, which spread out the city more than before. Additionally, new immigrant communities started to shape in the western and southern edges of the city. The growth of the city today is not limited to Tehran. Tehran shapes a discontinuous urban space that includes rural and agricultural areas, industrial zones, satellite towns and suburbs. These elements are all separated from each other and create a sense of disconnection and incompleteness between the urban elements.[11]

One of the biggest impacts of the 1979 revolution on urban planning systems in Tehran was ignoring the 25-year growth limit that was mentioned in Gruen's Master Plan. This resulted in illegal constructions and a period referred to as "revolutionary housing" which was based on the extreme assumption that "the land is God's" and whoever develops it can own it. This period ended in 1981. In 1993 the Ministry of Housing and Urban Development ordered a new Master Plan to ATEC, an Iranian consulting company. The review of the 1968 Master Plan showed that the city has not developed in the direction Gruen's

plan had predicted. The ATEC plan did not get implemented even though a new urban policy was suggested.

"Tehran 1380" was another plan that initially was intended for a 5 year period from 1996-2001. This plan, which later was extended for another 25 years, was produced by Tehran Municipality and the Ministry of Housing and Urban Development. The major goals of this plan were extension of infrastructure and transformation of military precincts in to green and cultural spaces. Management and preservation of historic building and urban fabric was envisioned as well. At the same time, the municipality decided to legally sell permits of higher density to individuals in order to sustain itself economically. This resulted in extremely higher densities specially in the northern quarters of the city.[12]

It is also notable to explain how selection of the mayor works in Tehran (and Iran) since it has changed the nature of urban management in Tehran. Before 1999, the mayor was chosen by the secretary of interior. Since 1999 and establishment of the city councils in Iran, the mayor is chosen by the 15-person city council who are elected by the people. Each district of Tehran has a district mayor who is also chosen by the city council and appointed by the mayor. The new system is a more democratic way of managing the city with a fragment of people's interference in the country's political and economic capital.[13]

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Appendix 2 | Methodology for observing public space and people's behavior in public space

Methodology for observation of public space in this thesis is the REAP methodology adapted from Setha Low. This is a collection of methods selected to produce different types of data from diverse sources that can provide a comprehensive analysis of the site. This method includes:

a) *Historical and archival documents* | Newspaper articles and city archives were collected in order to find historical documents about the area. The only document which listed Mianabad, however, was the Comprehensive Plan of Mianabad, commissioned by the municipality of Eslam-shahr to a private Planning firm.

b) *Physical traces mapping* | This was basically a report of physical evidence of human activity. The presence of bottles, trash, clothing, graffiti, paintings or any other physical object that indicated a human activity on the site. Evidence of a significant human behavior was notes in each of the field visits.

c) *Behavioral mapping* | This was specifically important and useful since the so-called public spaces in the site were limited and mapping of the activities in different times of the day made clear what are the needs and the potentials of the community.

d) *Transect walks* | A guided walk of the site with a few community members was a useful method in noticing what areas of the neighborhood were significant to the residents.

e) ***Individual interviews*** | The important thing about these interview were the categories that were made and people who were identified for each category. These categories included different age and gender groups.

f) ***Expert interviews*** | To be able to help the community identify a vision for themselves later on, it was necessary to know what different stakeholders have in mind. By interviewing different people in the city government, the community leaders and NGOs, the existing visions for this community were identified.

g) ***Impromptu group interviews*** | This was a very useful way of eliciting information from the community members. Whenever group of people was found, the needs of the community and its potentials were discussed. These people were identified coming out of a class or after prayer time at a mosque. The goal of group interviews, as opposed to individual ones, was to give the community an opportunity to express their ideas in a group as well as highlighting the existing differences and conflicts between people. These were open-ended and experimental interviews and therefore, were done mostly in the form of a group conversation.

h) ***Analysis*** | This is the fruit of all the steps above. This step is an actual overlay of all the research that has been conducted, interviews with groups and individuals, information from the transept walk, behavioral maps etc. at the end of this step, I had a good idea about what are the behavioral patterns in public space, what are the social networks, who are the main stakeholders, what are the patterns of everyday life and what are the visions and demands.

The summary of all these studies can be observed in the table below:

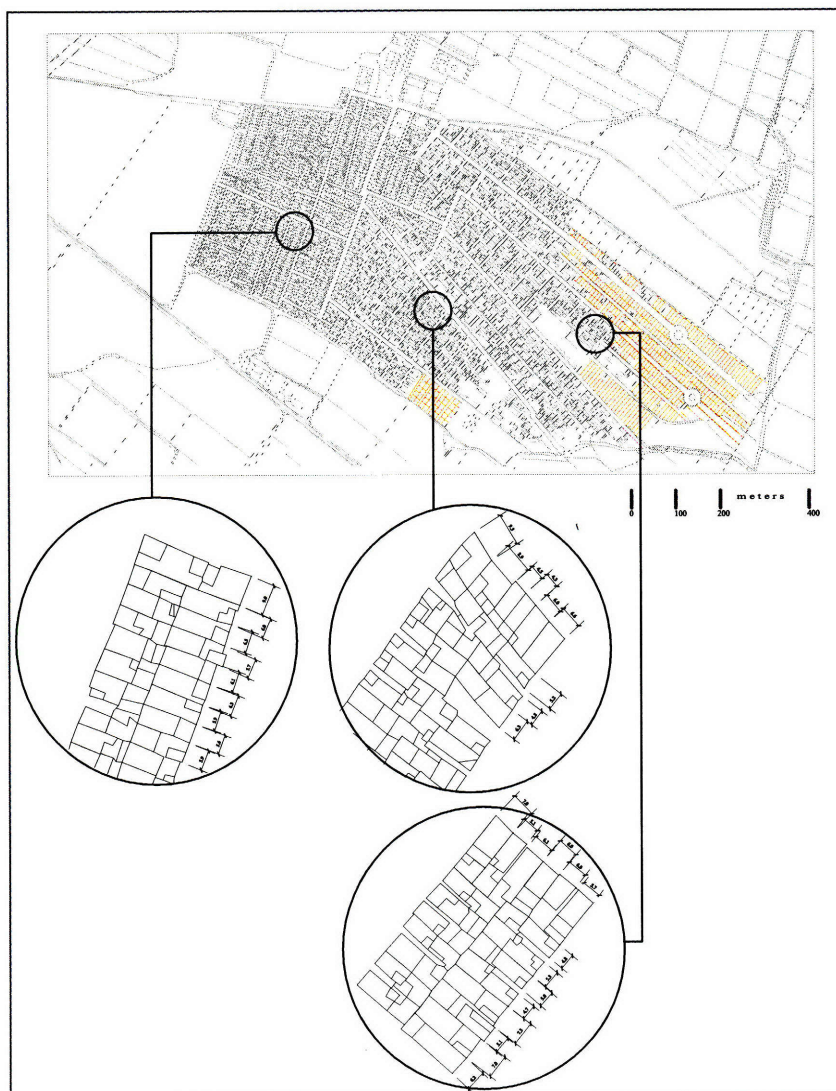| Method	Data	Product	What to learn?
Historical documents	Newspaper articles, magazines, books, governmental documents	History of the site's relationship to the surrounding communities	Historical context
Physical trace maps	Collected trash, patterns of erosion,	Description of night-time activities	Evening and night activities
Behavioral mapping	Time/space maps	Description of day-time activities	Cultural and social activities in public
Transect walks	Transcribed interviews and consultants maps of sites	Description of the site from community members' point of view	Community's understanding of public space, local meaning
Individual interviews	Interview sheets	Description of the site from community leaders' point of view	What is the community leaders and individuals' understanding of the site
Expert interviews	In-depth interview transcriptions	Description of the site from NGO and government's point of view	What are the local government and NGOs are envisioning for the site
Impromptu group interviews	Transcription of meeting	Description of group values, educational value	Group consensus of issues, problems and potentials

Table 1 | Summary of Site Observation Method

Appendix 3 | Sample Questionnaire

Question	What to learn?	Which phase to be used? Identify already existing public spaces, Design or Program?
Where did you come from?	Ethnography, ethnic backgrounds. Based on their background what kind of space is desirable?	Design and program
Why did you decide to reside here?	Community ties? Ethnic ties? Economic reasons?	Program
Number of household members?	General sense of household characteristics.	Program
Do you have relatives here?	Ethnic ties, Community relations.	Design and program
How many people do you know in the neighborhood?	Community relations, community unity and strength.	Identify already existing public spaces, Design and program
What do you do (for fun) at nights and weekends?	What are the neighborhood's potentials to be used later in programming?	Identify already existing public spaces, Design and program
Do you go to the city? Why?	How strong is the relation to the city? Which of the city's facilities can be used in programming for the neighborhood?	Program

How long does it take to travel to the city and what means of transportation are available?	What are the ways to use city's facilities in programming for the neighborhood? Can improvements in the public transport system help?	Program
Have you found new friends/relationships since you moved here? How and where you found them?	Community ties and relationships. Is there a meeting place anywhere in the neighborhood?	Identify already existing public spaces, Design and program
Do you have any contact with your neighbors? Do you exchange favors?	Community ties.	Identify already existing public spaces and Design
What is the most important thing that you want to achieve?	Where does the community see itself in future? In upward mobility programming, what should be considered to take the community there?	Program
What are the sources of income in the family?	Shapes of business, formal or informal? Where is it done? In the community or elsewhere? Can it be used to support the public spaces financially?	Program and Design
Do you do any income-generating activity? Where do you do them? (For women household)	What shapes of informal trade is being done? Can it be used to benefit the community financially?	Identify already existing public spaces, Design and program

Appendix 4 | *Land Parcel Size Estimation Based on the Existing Sizes*

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