3.0 OUR APPROACH

This report came out of secondary research on worldwide UA-activities and original fieldwork on Montreal community gardens. Our approach to the subject matter was to depart from the historical background and arrive at the current, local context; from large scale to the small scale; from general to the specific; from the architectural mindset and methods, to other less familiar fields, such as horticulture.

We focused intimately on urban residential areas. Linkages with the suburban, peri-urban and rural areas and related UA activities, have only been explored when they actively overlapped and engaged with urban dwellers, as a matter of food preference or ecology.

Within the City of Montreal, much like using a magnifying glass or a camera, we “zoomed” in on four gardens in three neighbourhoods: Cote-des-Neiges/NDG, Rosemont/ Petite-Patrie, and Sud-Ouest. These gardens represent different housing typographies, densities, socioeconomic and demographic realities, affecting the ratio of built to cultivable lands available to each resident. Physical and visual data were contrasted with social data. Then we moved inside the gardens, then inside each gardener’s plot, observing growing within a restrictive space of only 3m x 6m, with the daunting time and space constraints of sowing, inter-cropping, irrigating, and harvesting, all within a very short growing season.

Finally, after considering the design implications of planting in tight spaces, we explored financial inputs and outputs, administrative and social functions. We have sought ways to incorporate the conviviality and purely human aspects of community gardening into our architectural approach.
Urban agriculture can be understood as the relationship between the urban physical form and the interactions with its surroundings. Many factors, such as the mechanization of agriculture enter into play, which are important but beyond the scope of this paper. We are primarily concerned with the phenomenon of urban agriculture in Montreal as practiced in urban, and peri-urban areas.

What forms of urban agriculture exist in Montreal? And to what degree these activities complement and interact with the urban grid? Finally, we will look at how urban dwellers not only reclaim control over food productive capacities in the city but form partnerships with growers on surrounding farmlands.
3.1 MONTREAL
HOUSING TYPE AND PLANTING OPPORTUNITIES

Housing topography and built to open land ratios. Source: McGill College Geography Library

3.2 MONTREAL
LOCATION OF COMMUNITY GARDEN CASE STUDIES

Presently the City of Montreal has 76 community gardens housing 6313 plots. As part of this report, we present four case studies: Bonvoisin, Victoria, Le Mannais and Pere-Marquette.
3.2.1 CASE STUDY 1
ROSEMONT-PETITE-PATIRE BOROUGH

Neighborhood Analysis
The Rosemont-Petite-Patire Borough exemplifies the Montreal style of duplex and triplex dwelling, both allowing for medium density and ample open space for gardening and alleyways between backyards. It is a predominantly French-Canadian section of town. The urbanscape is marked by attached type of housing with front and rear backyards. The ground coverage in the neighborhood has 44% built and 56% open space.

Built Area
Open Area
44%
56%
Chart 1.
3.2.2 CASE STUDY 2
CÔTE-DENIGES BOROUGH

Site Plan: Victoria Community Garden, Area of Garden: 9163.53 sq.m

Income Profile
- a) 43% of households in the borough are below the low-income cutoff, as compared with 35% in the city of Montreal.
- b) Average family income in de Côte-des-Neiges/Notre-Dame-de-Grâce is $47,685.
- c) Average household income is $37,802.

Existing housing typography in the neighborhood.
Source: Project Team, 2002.
3.2.3 CASE STUDY 3
SUD-OUEST BOROUGH

Income Profile

a) The average income of borough residents is $18,226, as compared with $21,762 in the city of Montreal
b) 48% of households in the borough are below the low-income cutoff, as compared with 35% in the city of Montreal
c) Average family income in Sud-Ouest is $35,886
d) Average household income is $29,738

Chart 1.

Chart 2. Number of persons per household

Chart 3. Age of people in the Borough

Chart 4. Population by ethnic origin

Source: Project Team, 2002.
3.2.4 CASE STUDY 4
PERE-MARQUETTE

Site Plan; Pere-Marquette Community Garden, Area of Garden: 3563.42 sq.m

Income Profile

a) The average income of borough residents is $19,464, as compared with $21,762 in the city of Montreal.

b) The average income for men is $21,713, and $17,466 for women, or 80% of men’s average wages.

c) 42% of households in the borough are below the low-income cutoff, as compared with 35% in the city of Montreal.

d) Average family income in Rosemont — Petite-Patrie is $39,170. Average household income is $30,498.

Chart 1. Number of persons per household
Chart 2. Age of people in the Borough
Chart 3. Population by ethnic origin

Source: Project Team, 2002.
Gardening is about connecting with the earth and the seasons. It is about mastering certain skills, having a "green thumb," thus an ability to make something grow in accordance with the properties of the soil and each plant's requirements. For the city dweller, these are by and large, acquired skills. Montreal community gardens have therefore set up a simple yet comprehensive program to introduce members to the art of gardening. There is another aspect particular to the urban realm: the lack of land. As a result, the practices employed, and the vegetables grown, are not always the same as those of the rural farmer. Community garden tools are manually operated, and the yield of the harvest is limited to the physical dimensions of the plot. This section looks at what people grow and how they grow.

Montreal's unique climate allows a growing season of about half-a-year. Add a few weeks for spring and fall preparations, and the garden is left idle for 4-5 months. The seasonal clock is the gardener's main guide, roughly divided into three gardening-related activities: sowing, growing, and harvesting. This is mirrored by administrative and managerial functions by the City of Montreal who assures the smooth running of this activity throughout the year. Community gardens provide a distinct urban form of land use, contributing to the clean-up of urban waste. Decontamination of a new garden is now required by law costing about 400,000--1,000,000 dollars per garden.

Towns and cities are often located next to rivers and water bodies; urban concrete sometimes hides some of the best agricultural land. In addition to the discovery of alternative uses of urban land is the re-discovery of soil itself, its value, both as a growing medium and as defining a new form of urban lifestyle and aesthetic; the edible landscape.
3.3.1 OPEN SPACE AND COMMUNITY LIFE

Open Space
Every plot is about 18 square meters, three meters in width, and six meters in depth. The main passageway is about three meters in width, and the smaller passageways between individual plots are thirty centimeters in width. These open spaces serve both social and gardening functions. Gardening functions include access to individual plots and transport of plants and materials, composting operations, storage and cleaning of tools, irrigation, and maybe most important: sharing of information. Seasonal meetings serve the running of the garden, as well as evaluating planting progress. The social functions are not negligible, but vary slightly from one garden to another. The common areas thus serve as a neighbour meeting place, where friendships are made, tips, advice and recipes are shared, which help increase neighbourhood bonds through shared interests and common goals. Social events also make use of these open spaces.

Open spaces inside the garden include:
- Entrance gate area
- Main passageway
- Access to individual plot
- Tables and sitting area
- Bulletin board area

The Garden Rules
As a public area, the gardens have their rules. The first is controlled access: each gardener needs a key and membership card. In terms of general management, the gardens open from dawn to dusk everyday. No pets are permitted in the garden, and gardeners can only work on their own plots, except that he/she has the card of the owner of another plot. In terms of maintenance, gardeners must keep the passageways and open areas clean. Every plot must be done before June 1st; otherwise the committee has the right to transfer the plot to the next person on the waiting lists. In terms of plants grown in the garden, flowers and herbs together can not exceed 25% of the total area in the plot; and more than five kinds of vegetables must be grown in one plot. Plants that occupy too much space, or grow too high are also prohibited. The garden must be cleared up by November 1st.

Evenings of “Horticultural Merit”
The City honors the best gardeners and the persons in charge of the committees of gardens at the time of the “Horticultural Merit” event. This event generally takes place one evening in October. This is an annual contest aimed at rewarding the best gardeners for each Community garden. The choice of the most beautiful small gardens is carried out by a jury, in 2 or 3 stages, that is to say at the end of June, at the end of July or at the end of August.

The following criteria are then evaluated:
- a) The number of different cultivated vegetables
- b) The small garden and the alleys
- c) The quality of harvests
- d) The control of the pests and the diseases

Publications
The city of Montreal publishes several publications in support of their community gardens. Various publications (a bulletin and a newsletter) provide information, practical advice and necessary knowledge in order to support day-to-day organic food needs and support. Eco-initiatives publish “Victory” offering information in two areas: environmental education and socially-driven gardening / food security.
3.3.2 **SOIL PREPARATION AND COMPOSTING**

**Soil Preparation**
Montreal is in the 5b area in the plant hardiness zones in Canada, which means it has a relatively good climate and soil condition for agriculture. Vegetables need moderate and organic soils. Moderate means the soil should not be extremely heavy or sandy; organic means to make the soil nutritious. An appropriate pH for the soil is also important: peppers and potatoes thrive in acid soil, and most other plants need a less acid soil with pH from 6.3 to 7.

**Compost**
The composter in the gardens is built of wood planks, spread out with gaps to allow the necessary air to flow into the pile. Vegetable and soil layers are a few centimeters thick and layered into the composters, alternatively. Sometimes, water is added during dry periods. The compost bins are purchased at a garden center. They take up very little space, have a neat appearance and, in addition, do not attract flies, dogs or rodents.

In the Eco-initiatives garden in NDG, the composter is a geodesic half-dome. The plastic cover permits gradual removal according to weather conditions. The best time to start compost is in the fall when the weather is still mild enough for decomposition to start and the bacteria will multiply and be ready to “go-to-it” as soon as the frost melts in the spring. During the winter, when the temperature in the heap drops below 5°C, all decomposition stops until in the spring. The best time for spreading the compost is in the end of the season when it is very rich in humus and the worms will then integrate it into the soil during the coming winter. The contents of the compost heap can be leaves, garden waste, weeds, grass clippings, sawdust, manure, wood chips, straw, and earth. Diseased garden waste, plastics, metal, glass, and synthetic materials should be excluded from the compost heap.

The N:P:K (Natrium, Phosphorus, Potassium) ratio of compost varies according to the materials composted. It represents an excellent source of free humus and micro nutrients when soaked into the ground in spring or fall. The value of a compost heap in every garden, large or small, cannot be underestimated. It is simply a matter of collecting and subsequently returning to the soil much of the “goodness” that previous crops depleted.

**Seed Storage**
The seeds in Eco-initiatives are stored in separate containers for the next season’s planting, and also in order to breed and protect certain non-hybrid seed species well adapted to the Montreal region.

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Alternate layers of soil and organic waste.  
Source: Coleman, 1999.
In community gardens, approximately every 20 plots have one tap, plus a hose that the gardeners use to water the garden. Most of the gardens have plastic barrels which allow the ice-cold water to warm up; this is especially good for newly bedded plants. Some gardeners make their garden in two or three layers: the plants that need more water are planted in the lowest layer where water permeates slowly. For example, the English herb garden layers the garden in two or more levels, allowing more water for plants at the lower level.

It is best to water one or two times per week thoroughly, that is: making sure the moisture goes beneath the roots system. Giving a large number of light sprinklings is not often effective. In dry conditions roots will search for water, and if only the top of the soil is wet, the roots will reach upwards to obtain it. When this occurs, the roots system of the plants is weakened and permanent damage is done. Although the plants may live, the size and quality of the crop will be poor.

Comparing the amounts of water required for residential garden use, for ornamental gardens and lawns, community gardens require about the same amount or less.

Every community garden has a small shed for the tools, which the gardeners can use at a cost of 5$ per year. The most frequently used tools are garden spades, digging forks, rakes, hoses, trowels, sharpening files or stones, watering cans, garden hoses and sprinklers.
Constant crop rotation should be the motto of organic gardeners, since nature prefers communities of mixed plants. These highly diversified neighbourhoods have many advantages, not the least of which is the fact that different plants make different claims on the soil. Each one takes from it only the nutrients it needs and leaves the rest for the others. Moreover, the plants themselves use their roots to deposit substances that affect the composition of the humus layer. The greater the variety of plants, the greater is the variety of organic substances that enrich the ground and regenerate the soil. This also helps prevent an unbalanced extraction of essential nutrients.

The mixed-planting method is a natural form of crop rotation. Under this method, the crops do not vary seasonally from year to year, but vary geographically from row to row in a single bed. They take differing amounts of nutrients from the soil, but in turn deposit different substances in the soil via their roots.

The plan of small community garden.
Source: Project Team, 2002.
3.4.1 PLANNING AND DESIGN CHOICES

Organization of the lot
Source: Project Team, 2002.

Tires or tomatoes?
3.4.2 INTERCROPPING

Practical gardening experience repeatedly demonstrates that certain plants encourage each other’s growth while others are apparently so uncomfortable together that they begin to wilt. Moreover, there are certain combinations that encourage each other in the development of fragrance and taste. Some plants even protect their neighbours from garden pests.
A well functioning community garden: while only active for a short growing season, significant administrative and infrastructure support is required throughout the entire year.

If a gardener has not planted by the first of June, the plot will be given to the next person on the waiting list.

Responsibilities
- Enforcing rules
- Distribution money to the garden communities
- General assembly of gardeners
- Begin garden visits
- Input date collection
- Distribute plots

**Operational Stage**
- Animators begin their work
- Vacant lots are offered to new gardeners according to the order in which they appeared on the waiting list
- Meeting with garden presidents
- Set seasonal goals
- Renewal of membership
- Elect delegates for gardens
- Reception of budgets
- Determine individual responsibilities
- Vacant lots are offered to new gardeners according to the order in which their name appeared on the waiting list
- Send renewal of membership
- Solicit horticulturist animators

**Preparation Stage**
- Seeding
- Managing
- Harvesting

**INSIDE AND OUTSIDE THE GARDEN**
- Gardening Activities
- Administrative Activities

**MARCH**
- Information meeting
- Period of hiring horticulturist animators

**APRIL**
- Preparation of garden for winter
- Horticultural evening celebrations in the various neighbourhoods before November 1st.

**JUNE**
- First part of the seasonal evaluation
- “Horticultural Merit Night”
- Selection of the best plot in each garden

**JULY**
- Preparation for seasonal reports
- Large seasonal improvements

**AUGUST**
- Final Report Stage
- Share information on new improvements

Source: Project Team, 2002.
Each community garden has a committee comprising mainly of the president, secretary, and treasurer. This committee is elected by the gardeners of each garden before the end of the season. The role of the committee and the powers it has differs on whether the garden is incorporated or non-incorporated.

The city of Montreal covers 177 square km. with a (1996) population of 1,016,000, a density of 5739 /square km. Nearly 7000 community garden plots directly involve 10,000 gardeners plus their families in 76 different garden locations, touching 1% of the population directly and 25,000 or more through the network of family and friends. It is an effective program that reaches people without access to their own private land.

About 25% of the population in Montreal lives in single houses, 10% in apartment building less than 5 stories and about 65% live in apartments of 5 or more stories. According to these data, about 25% of citizens cannot access open land directly, which means 250,000 persons. Along with 25,000 citizens involved in peri-urban, therefore, about 14% of population participate in urban agriculture.

Access to land and water are maybe the most important ingredients for a garden. Facilitating or controlling access to these scarce resources is a major challenge in dense urban cities. Land tenure is of course a major concern; as it is, people without land often suffer from food insecurity. Quality of land is also of major concern since most land in industrialized cities today is contaminated. In Montreal, de-contamination of one single garden is estimated at $500,000 - $1,000,000. In less developed countries, other sorts of waste contamination and water shortage may limit the potential for urban agriculture and also be a source of conflict.
Since 1997, the total number of gardens has increased slowly with 4 new gardens added to the total in 6 years. However, it would be misleading to say that community gardens have become less of a priority: while some gardens have disappeared due to real estate development, the city has developed new gardens to replace those which have disappeared, which indicates that from a management and capital input point of view the city has maintained its involvement to at least satisfy current levels of activity. The city also shows concern for not spurring a wave of public protest which would take place if any garden were to disappear permanently.

Public services include the legal framework provided by zoning laws and the negotiation of land leases serves to protect existing community garden activity. Vacant lots transformed into community gardens become part of an important public hearing process whereby the land is added to the city Park land. This important protection, in addition to the negotiation of 5- and 10-year leases with private owners, and the relocation of gardens subject to real-estate development, makes Montreal a safe place for community gardening. This is a critical element that cannot be readily assumed in other (rich or poor) cities in the world.

Securing the garden is the second most important aspect. Without adequate protection in terms of land rights or physical protection against theft or vandalism, a garden will be short-lived. Montreal is setting a unique example by including vacant land designated for community gardening in the Park zoning laws, and by negotiating long-term leases with private owners. This legal support makes it near impossible for community gardens to disappear. Such a decision to develop and allow construction would require a public hearing and meet with a public protest.

The city of Montreal has therefore replaced every garden that has had to close for development purposes. In other parts of the world, community gardeners like squatters are subject to official harassment. This situation prevails in North American cities such as Toronto and Vancouver, Brooklyn and New York. In New York, in September/October 2002 -after three years of negotiation- the gardeners’ legal battle ultimately led to a compromise solution between the various stake-holders: community gardeners, developers and the Bloomberg administration: 198 gardens were protected by law, 114 are still under review, and 38 gardens have already been bulldozed and have been designated for immediate development.
The city of Montreal is a fully modern urban center with well-functioning city departments and a well-established infrastructure already in place from which the community gardens in Montreal benefit immensely. This section explores the resources employed by the city of Montreal for the creation and maintenance of community gardens.

Is this the exclusive activity of a rich city? Or is this phenomenon only applicable to Montreal? While these questions are not be fully answered, the section identifies various management tools and resources that are critical to community gardens in Montreal. The 76 gardens within the city of Montreal have both dedicated and non-dedicated resources in terms of budgets and staff. Dedicated human resources reside within the Sports, Leisure and Social Development Services (SSLDS) where the “Superintendent” supervises the program while five Horticultural Animators serve as liaison between the gardening activities and the administration. These full-time staffs are employed seasonally from March through November with individual contracts. The total annual budget of SSLDS is approximately $115,000 and includes all the administrative, coordination, publication and distribution functions.

In conclusion, provisions of access to land, land security and water are the single most important resources for a government to assume responsibility for in order to facilitate community-led urban agriculture. Historical antecedents vary according to each physical form, but today coexist side by side mainly due to individual motivation and allegiance, but the cultural environment is equally important. Educated and relatively well-to-do individuals tend to engage in ecologically motivated networks and social activism where income substitution may not be important, but where the quality of food and adherence to a certain lifestyle become paramount. Less well-to-do individuals tend to seek secure environments where they can maximize their food production while also enjoy social interaction and strengthen the support mechanisms within their neighbourhood. Food security and the strength of the neighbourhood go hand in hand.

Cultivating the land and creating edible landscapes is an universally practiced activity, of both rich and poor residents and of people with various backgrounds and motivations. If the municipality does not support or facilitate the adequate supply of land, our study shows that individuals find a multitude of ways to grow and organize production both physically and through social organizations which seek legitimacy. Even in Montreal -most supportive of community gardening- alternative forms of collective, public-private and peri-urban farm-city dweller partnerships have emerged as an alternative when city programs did not meet demand. Urban agriculture is therefore not only about food production or control thereof, but an expression of achieving senses of urban identity and belonging in the city. A topic that would merit further study is how these various forms of urban agriculture are affecting peri-urban and rural activities, and how these forms interact.

The edible landscape is a functional form of greening that rejects the purely ornamental and expensive forms, conventionally characterizing urban open land. Ultimately, the city center may not only exhibit the green beauty of its parks, but also provide functional spaces for production for its citizens.