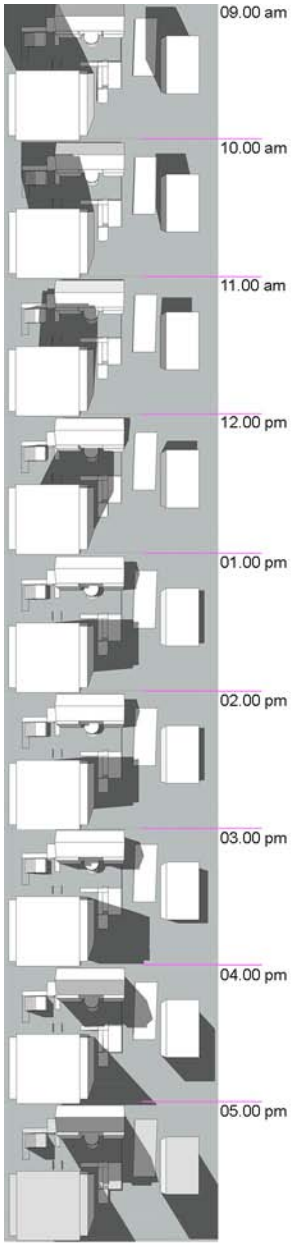
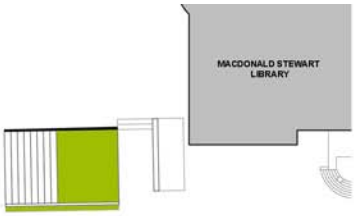
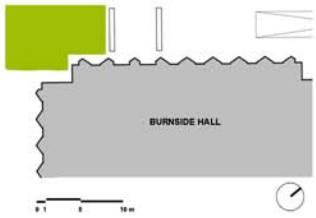
MAKING THE EDIBLE CAMPUS

SUMMARY

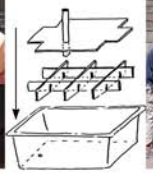


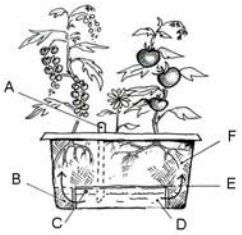




THE PROPOSAL

In the spring and summer of 2007, volunteers and researchers from Alternatives and Santropol Roulant (two leading NGO's) and the Minimum Cost Housing Group of McGill University's School of Architecture collaborated in efforts to incorporate productive growing in a concrete covered, prominent urban corner in a public location of the University's downtown campus in Montreal. The result, the Edible Campus, was a 1,000 square foot container garden that involved citizens in the creation of green, edible community spaces. The Edible Campus has also demonstrated how productive planting can be woven into urban spaces without diminishing the utility or functionality, while exploring strategies for increasing food production in the city and improving spatial quality by exploiting underutilized and neglected space.





A: Filling tube
B: Underground irrigation by capillarity
C: Overflow
D: Water reservoir
E: False bottom
F: Soil mixture

THE PROCESS

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INNOVATION & UNIQUENESS

Urban Challenges

Underutilized urban spaces: It is our belief that, not only rooftops, but underutilized leftover spaces, urban corridors, transitional urban spaces and, if properly monitored and managed, brown-fields can become ideal places for urban growing. It is for these reasons that the Edible Campus Project should be looked at in this broad urban context.

Typical underutilized leftover urban areas:

- Vacant lots
- Paved areas in institutions such as school yards or university campuses
- Backyards
- Balconies and railings

Ways to introduce urban growing:

- Vertical growing
- Containerized garden
- Rooftop garden

Purpose: The purpose of Edible Campus is to demonstrate how sustainability, food security, and environmental quality can be linked through innovative urban design to produce food in a challenging urban setting, and to show ways to weave productive planting in urban spaces without diminishing their utility or functionality.

Montreal's productive landscapes: Montreal has a long history of community based urban gardening that was facilitated by the local government which began in early 1970's. Today, there are close to 9000 allotments in 97 community gardens and about 30 collective gardens in various urban locations. In community gardens people work on small parcels of land individually, whereas in collective gardens, they work together on a single large plot for mutual benefits.

The total number of allotments and number of community gardens have not increased significantly in last decade, however the requirement for these plots is on the rise. In some neighborhoods the demand is so high that the prospective clients have to wait 2 to 3 years for an allotment garden to become available. Recent soil studies, which were conducted in 2007, have shown that the soil in some of the community gardens is contaminated. The city has opted to close-down these gardens for safety reasons and is only permitting to grow decorative plants and flowers instead of vegetables, further increasing the pressure on other gardens. The high demand and limited supply of space for gardens brings a need for alternate and creative solutions for urban gardens to exist. It is also important to create and expand opportunities for ordinary citizens to participate in gardening.

Challenge: When the notion of growing food in urban areas is raised, immediate reactions from professionals, such as architects and planners questions the availability of land in cities to build on, let alone the topic of growing food in urban areas. The lack of adequate community garden plots in a city like Montreal is also symptomatic of this traditional mindset, which the Edible Campus hopes to break.

Even small sterile spaces can make productive places.

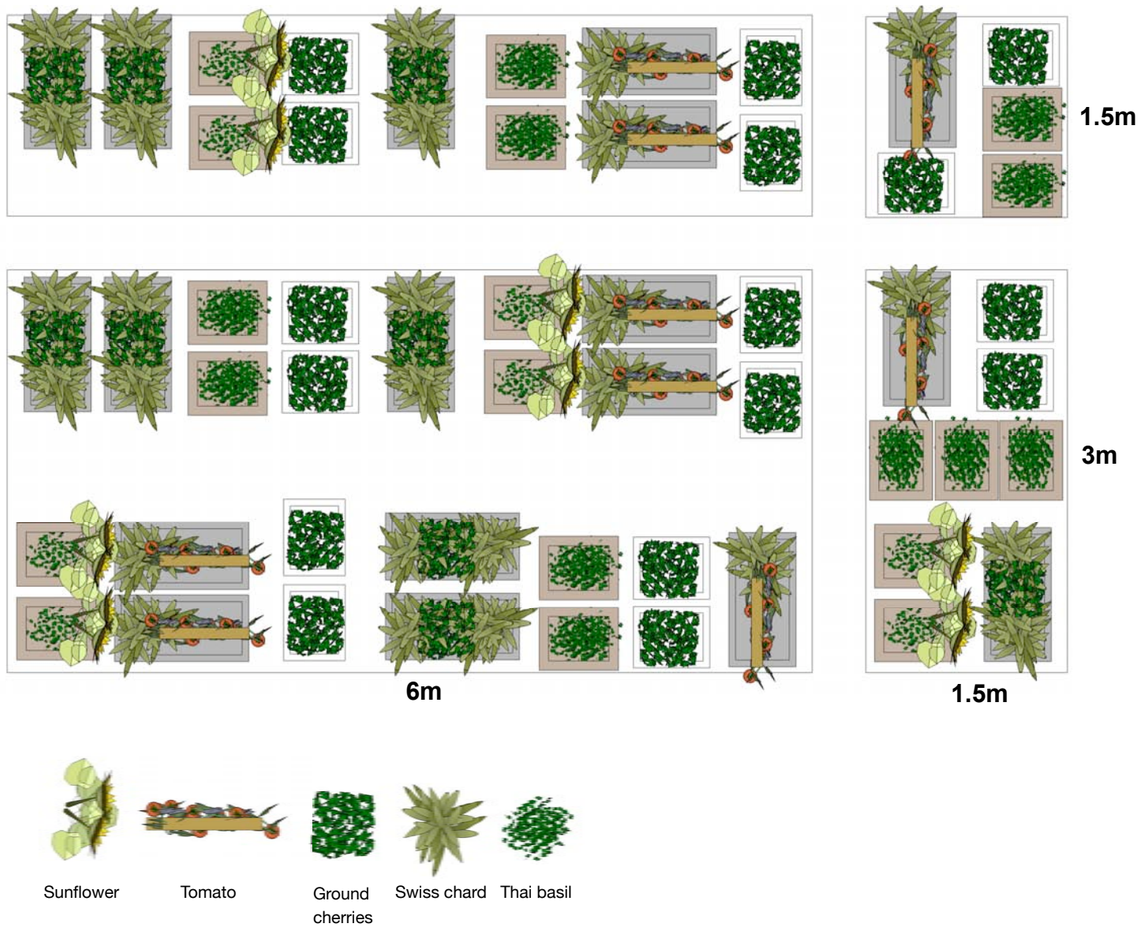


Fig. 1. A variety of lot sizes, measurable to human scale urban patterns

INNOVATION & UNIQUENESS

Community - University Partnership

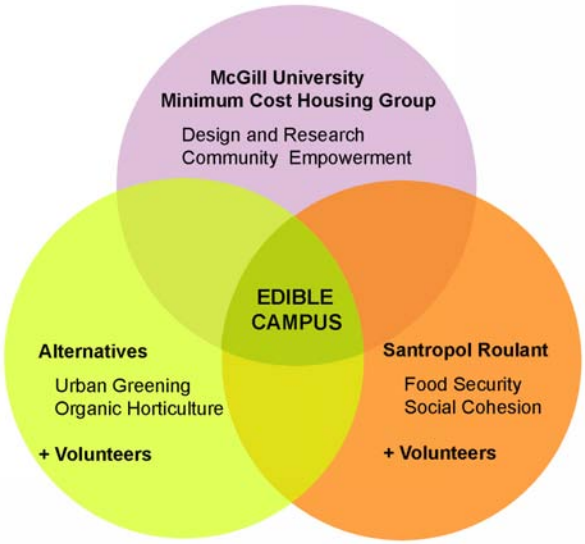


Fig. 2. Partnership chart

A true partnership: The Edible Campus is the product of a true community-university partnership. Working independently, none of the partners could achieve what was done without working as a synergistic team. The university alone could not have realized this project for several reasons: The university's researchers could design the garden and has available space to grow, but its academic calendar and the growing season in Montreal do not match. Majority of students leave during summer months, the ideal time for growing, and return only in the fall. Similarly, local NGOs have their own strengths and weaknesses: They are well connected with the community and have strong outreach programs, however lack spaces to grow. Their nonprofit and voluntary mode of operations makes them ideally suited to receive and share the garden's harvest.

The three partners together developed strategies for increasing food production in the city by exploiting underutilized and neglected spaces, such as urban corridors, rooftops, balconies and terraces, common in cities. The project involved the following primary actors:

— **Alternatives** is a Canadian NGO involved in the field of development. Alternative's team from their Rooftop Gardens Project is dedicated to the greening of cities. Their aim is to encourage the physical activity of youth, support their interest in organic food, and involve the elderly. In addition to these three groups, they are linked with the volunteers who either live in the neighborhood or are students of McGill and other local universities. A mailing list is maintained by Alternatives to notify them of the garden's activities and to welcome everyone to participate in them.

— The **Minimum Cost Housing Group** is a research and teaching entity of McGill University's School of Architecture. Since 2003, it has been focusing on integrating productive planning in cities on permanent basis as a part of "Making the Edible Landscape Project."

— **Santropol Roulant**, a NGO based in Montreal, focuses on food security. Its mission is to use "food as a vehicle to break social and economic isolation between generations and to strengthen and nourish" a local community.

Environmental Sustainability

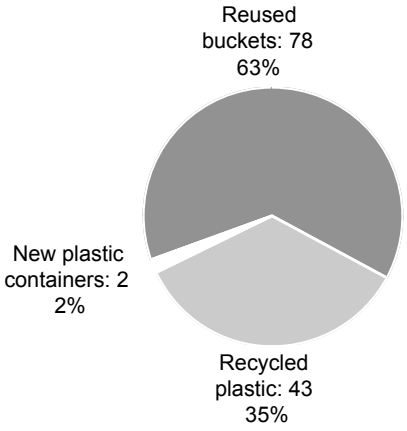


Fig. 3. Growing containers' origin

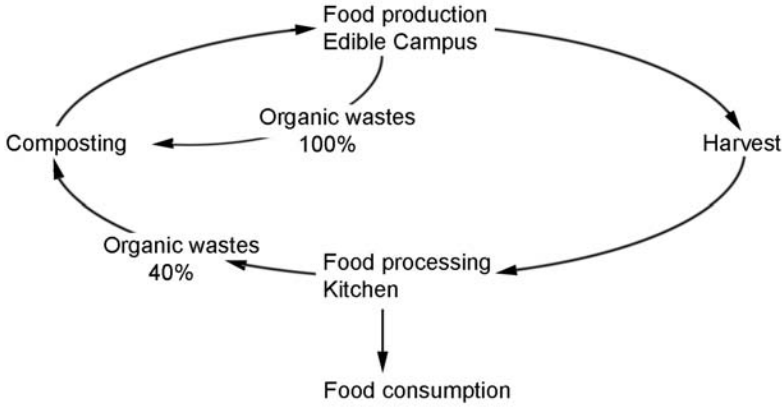


Fig. 4. Recycling organic wastes in the Edible Campus

3-Rs: Reduce, Reuse and Recycle

Reducing food miles: Over the course of the 20th century, cheap fossil-fuel energy, the forces of globalization, and broader socio-cultural patterns de-localized food production. To make cities truly sustainable, where more than half the humanity now lives, it is paramount to bring productive planting back in the folds urban and peri-urban areas. In addition to reaping benefits of quality local food production and engagement with the life sustaining everyday natural processes, productive growing in cities will help reduce their global 'ecological footprint'—made especially large by transporting and storing foods from distant places. Rather than consumption centers, cities can become centers of production; this would help reduce food miles, and as a consequence, CO2 emissions as shown on page 19-20.

Reducing wastes by generating less packaging: Harvested produce from the Edible Campus along with other daily food for the registered clients is processed in Santropol Roulant's kitchen and delivered to them, mostly on foot or bicycle. This does not require advertising and uses minimal energy for packaging or transport.

Salvaging containers and recycling plastic: In 2007, Edible Campus comprised 123 growing containers. As presented in the chart, 63% were made out of reused buckets or barrels; 35 % were made of recycled plastic and less than 2% were newly designed containers as shown Fig. 3.

Recycling organic wastes by composting: A cycle of production can be made self-sufficient with a very small input of external sources. The Edible Campus uses two wooden compost bins to recycle garden's organic wastes. In addition, Santropol Roulant's kitchen is also equipped with a worm compost that transforms 40% of the kitchen's organic wastes as presented Fig.4. The output is an organic produce which is free from chemicals normally used in conventional farming systems.

Reducing the "heat island:" Edible Campus was setup on a concrete paved area, a heat absorbing urban space, where well placed plants could thrive. To reach maturity and deliver a full harvest selected plants require extended periods of direct sunlight; as an outcome, the garden's vegetation contributes to microclimatic cooling by evapotranspiration and thus reducing the "heat island" effect.

INNOVATION & UNIQUENESS

Social Sustainability

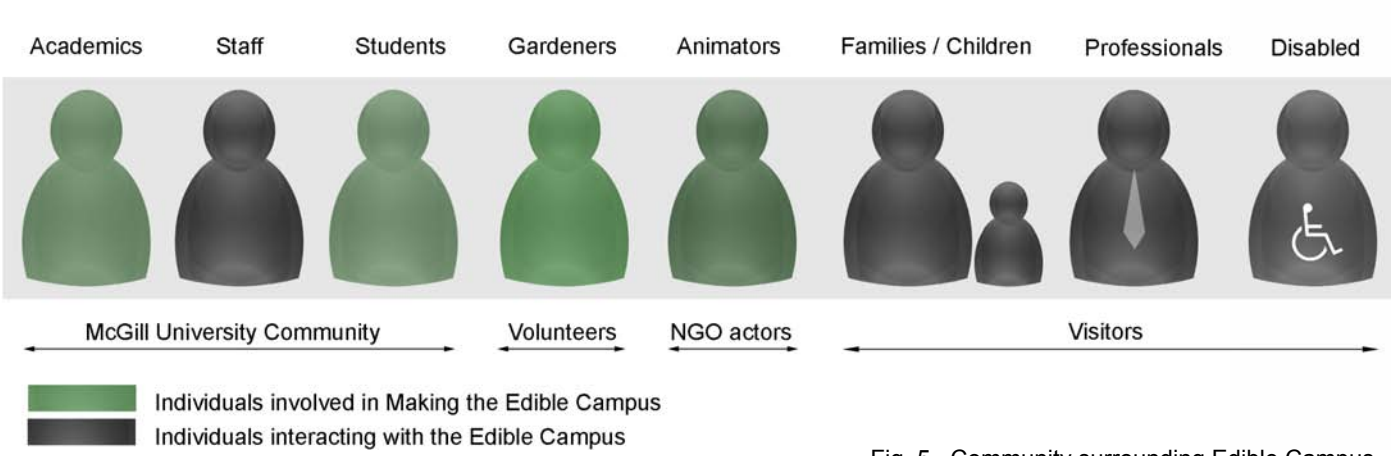


Fig. 5. Community surrounding Edible Campus

Active community participation: This bottom up seasonal initiative involves volunteers who are actively engaged in running the Edible Campus (page 15). Community volunteers are involved in every step of gardening: Through a participatory process they help set up the garden, water weed and maintain it, collect and deliver harvest from it, they are also involved in related social and outreach programs, and at the end of the season help dismantle it.

Social inclusion: Diverse community members surround the Edible Campus; they include: The McGill University community, volunteers, NGO actors and visitors, as shown in Fig. 5. Community members from diverse backgrounds come in contact through the garden; in the case of McGill, they are primarily composed of students, academics and staff. Interaction happens on a variety of levels, from simply passing through the site or engaging in conversations that are inspired through curiosity, to cooperation in maintaining the plants or attending events like the harvest festival taking place within the garden as presented on page 16. Moreover, Edible Campus has emerged as a platform for intergenerational exchange and dialogue.

Proceeds to vulnerable citizens: The harvest is brought to the Santropol Roulant (NGO partner's) kitchen where it is processed and delivered to their clients' who are mobility impaired breaking their social and economical isolation. This has added an important layer of community outreach; this was yet another accomplishment of this unique project.

Education: Situated at the heart of the top Canadian and world-renowned University, as a design prototype the Edible Campus is well placed to raise awareness among future leaders on urban productive planting. It has allowed academic programs to observe and analyze the experimental garden. In addition, workshops led by partner NGOs presented low-cost urban greening methods to both adults and children as illustrated on page 16.

The Edible Campus has created opportunities for people of various social backgrounds in Montreal to come together. The net result is the aid to positive contact with those in need, and productive use of underutilized open space on McGill's downtown campus.

INNOVATION & UNIQUENESS

Challenging Urban Context

The university's campus has numerous open spaces that can become potential growing areas. However, we identified a bleak barren concrete paved plaza measuring 3287 m^2 as our potential site. A portion of the plaza, also used as transitional paths, is converted into a productive garden.

Fig. 6. Potential urban location for the Edible Campus

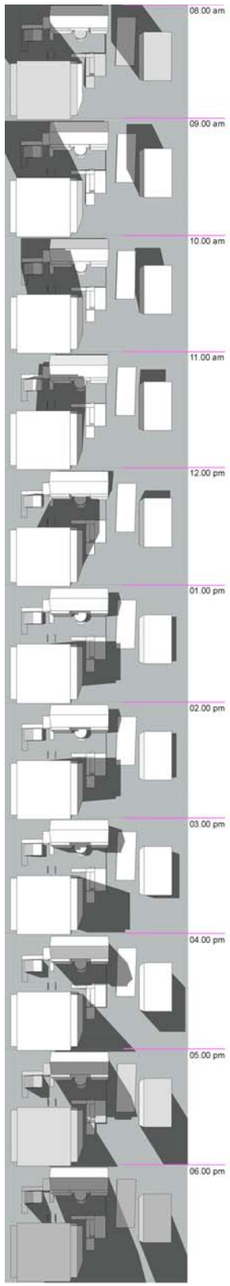


Fig. 7. Sunlight study, May 1st 2007

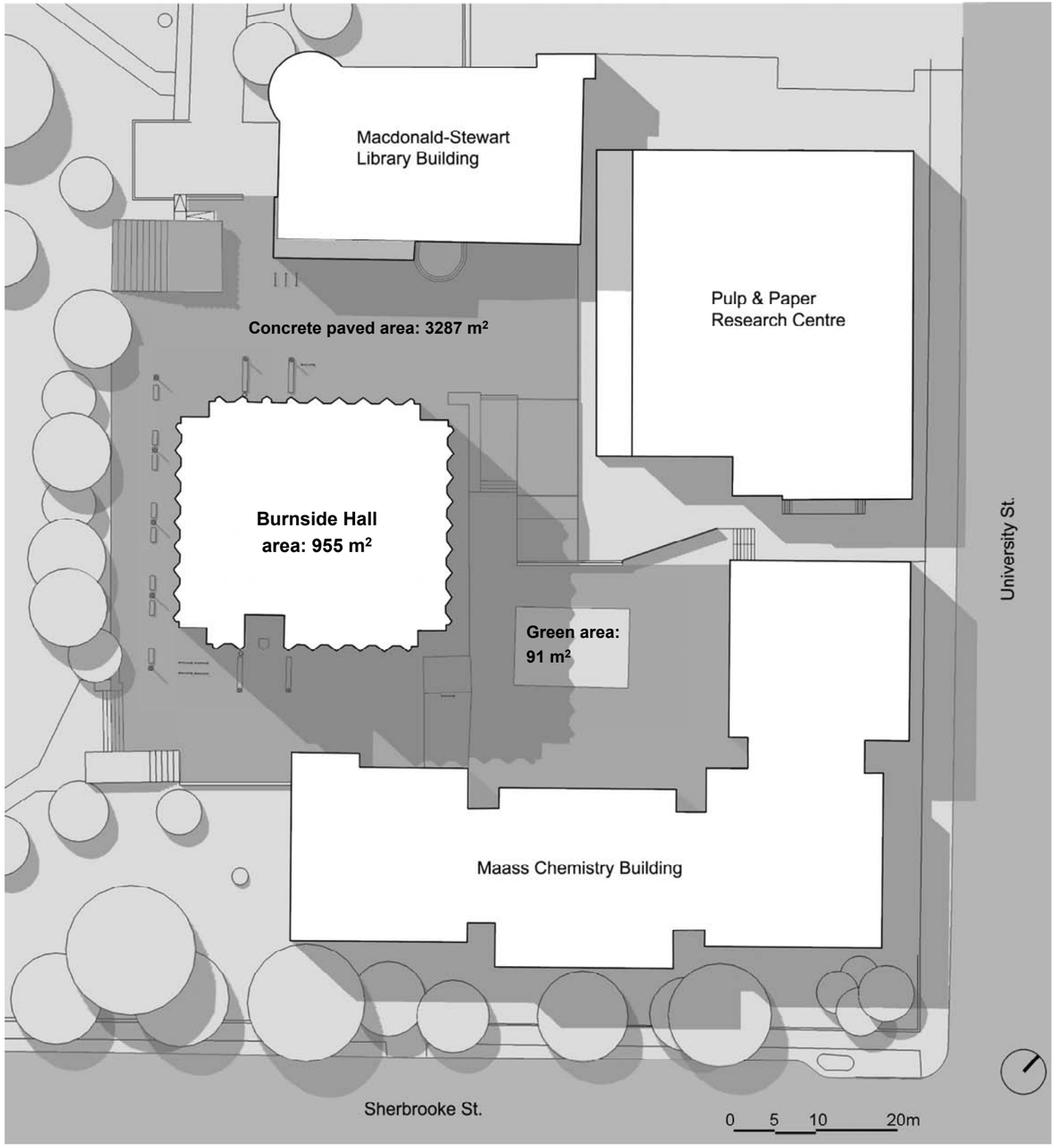


Fig. 8. Site plan

INNOVATION & UNIQUENESS

Design Fragments

Edible Plants

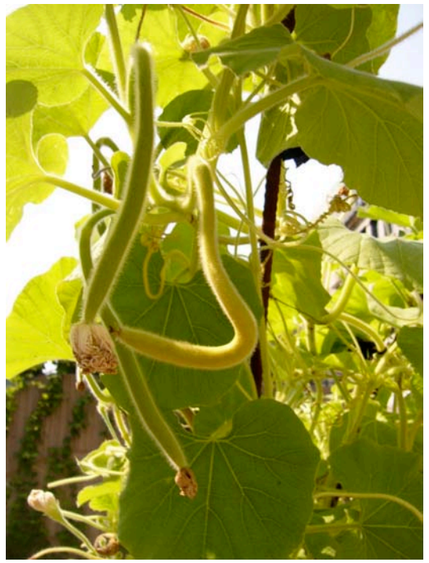
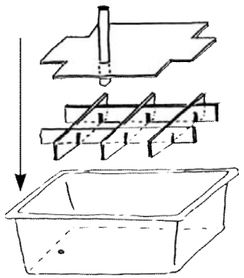


Fig. 9. Gourd-Squash

Fig. 10. Green peppers

Ecological Growing Container



A.Filing tube
B. Submerged soil mixture column.
C.Overflow
D.Soil mixture
E.False bottom
F.Water reservoir

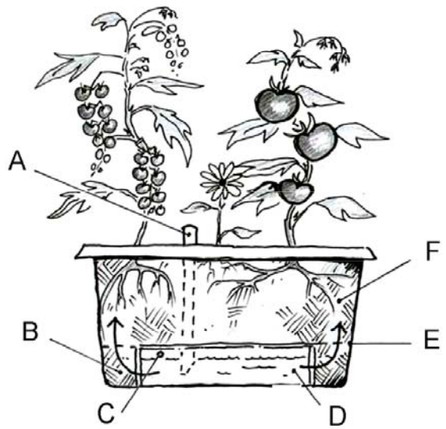


Fig. 11. Growing Container

Community of urban gardeners

Fig. 12. Gardeners

Edible Campus

Fig. 13, 14, 15. 2007 Edible Campus

Fig. 16, 17. Underutilized terrace transformed into a productive and attractive place

Fig. 18, 19. Bare, paved over concrete plaza being transformed through the use of design fragment

Fig. 20. Bush hammered concrete wall

Fig. 21. Vertical growing: bush beans over concrete wall

POSITIVE CONTRIBUTION

Edible Campus

Fig. 22. Bush beans meet bush hammered concrete

POSITIVE CONTRIBUTION

Community Participation

Fig.23. Setting up the garden
Volunteers prepare containers and layout the garden

Fig. 24. Maintaining the garden
Volunteers are involved and kept informed of the garden's activities through a mailing list. They help water, weed and harvest the garden three times a week for three hours.

Fig. 25. Closing the garden
Paved areas are cleared for winter and containers are gathered and stored for the next season

POSITIVE CONTRIBUTION

Educating Children

Fig. 26, 27. Workshops are organized to reconnect children with edible plants and make them learn principals of growing food and the food cycle

Fig.28. In the process, children also contribute to the garden's maintenance

POSITIVE CONTRIBUTION

Social Cohesion

Fig. 29. Solstice festival
Date: Thursday, 21st June 2007
Time: 17:00h to 21:00h

Fig. 30. Mid-season festival
Date: Wednesday, 1st August 2007
Time: 18:00h to 22:00h

Fig. 31. Harvest festival
Date: Thursday, 20th September 2007
Time: 17:00h to 22:00h

POSITIVE CONTRIBUTION

Organic Harvest

Time span and number of volunteers that worked for the Garden	
Garden opening date:	26th May 2007
Garden closing date:	23rd Oct. 2007
Time span:	5 months
Total days volunteered:	56
Total volunteers:	266
Official visitors:	148

Statistical data showing the produce from Edible Campus	
Total number of containers:	123
Total container growth area:	30 m^2
Produce in kg:	176.9 kg
Average produce/m^2:	5.9 kg/m^2

Fig. 32. Harvest day
During the summer season, the Edible Campus provides 1/3 of Santropol Roulant's needs in fruits and vegetables

Crop type	Total harvest (kg)
Arugula	0.62
Basil	10.51
Bok Choy	2.60
Broccoli	0.30
Cantaloup	3.00
Celery	9.50
Cherry Tomatoes	15.90
Chives	0.09
Cilantro	0.02
Cucumbers	27.04
Dill	0.10
Edible flowers	0.97
Eggplant	0.90
Green beans	11.45
Green Peppers	10.06
Ground Cherries	7.32
Lettuce	9.55
Leeks	7.20
Mint	0.29
Onions	0.60
Parsley	0.74
Squash	2.30
Swiss Chard	5.62
Thai Basil	1.35
Tomatoes	48.85
Total	**176.90**

INNOVATION & UNIQUENESS

Small Garden - Big Impact

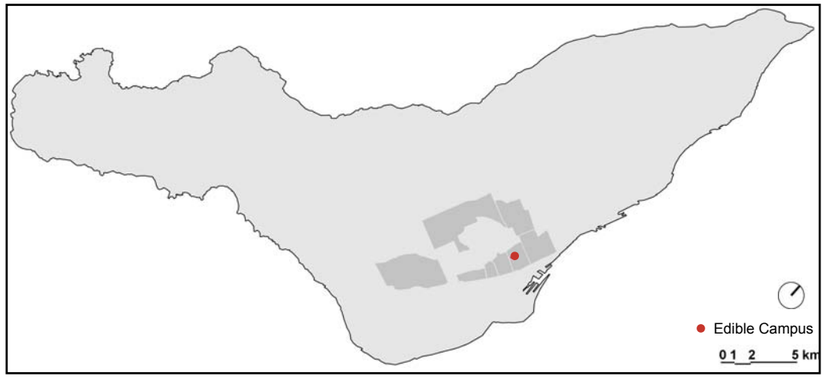


Fig. 33. Impacted area of the Edible Campus on Montreal Island

Fig.34. Delivery mode

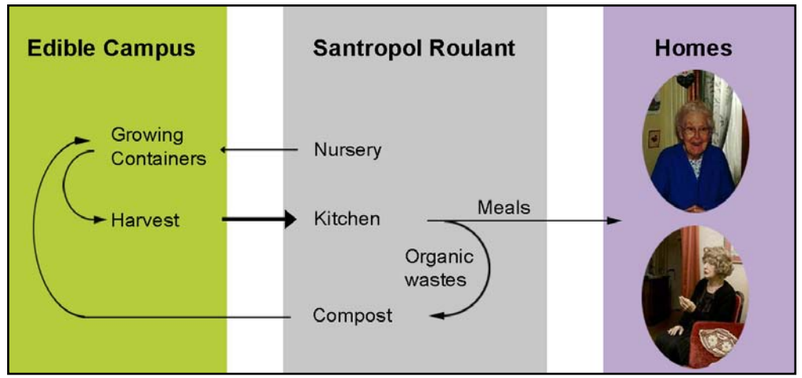


Fig. 35. Integrated food cycle

This small garden which measures 120 m² has a big impact and a wide reach: The garden's harvest is walked or bicycled to Santropol Roulant's kitchen, where it is transformed into nutritious food. Prepared meals are delivered to clients who have mobility impairments; breaking their social and economical isolation.

The distribution route follows the division of urban districts. A minimum of 8 volunteers are coordinated by Santrapol Roulant and deliver an average of 90 meals per day in 8 districts, namely: Mile End, Cote-des-Neiges, Notre-Dame-de-Grace, Westmont (which is an independent city), Downtown, McGill West, McGill, and Centre Sud. In the case of the two furthest, Côte-des-Neiges and Notre-Dame-de-Grace, cars are used. For the other districts, volunteers either use a bicycle or walk. On Tuesdays, in summer, meals are mainly prepared with the garden's produce.

This map was created following data from Tuesday, August 14th, 2007 of the NGO's distribution route, which lists the addresses of 67 clients as well as the items to be delivered. Clients' homes are represented by black dots. The Edible Campus and Santropol Roulant are represented by red dots.

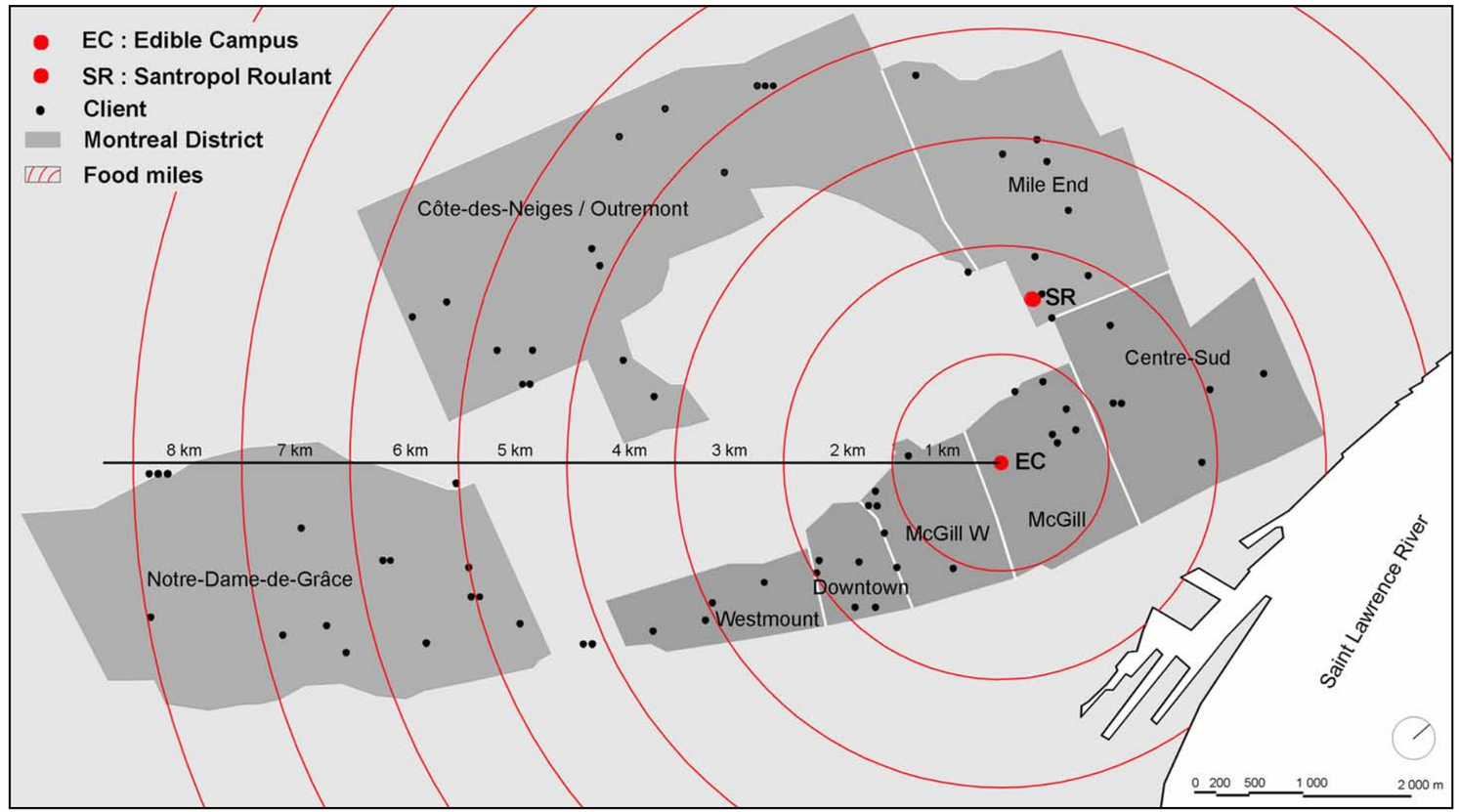


Fig. 36. Mapping the big reach of a small garden which also cuts down the food miles

POSITIVE CONTRIBUTION

A Renewable Garden

An advantage of a container garden is that it can be re-arranged and improved upon year after year, particularly in a place like Montreal where severe climate limits the growing season to just 5 months or one harvest per year. As such, the proposed edible garden is for next season.

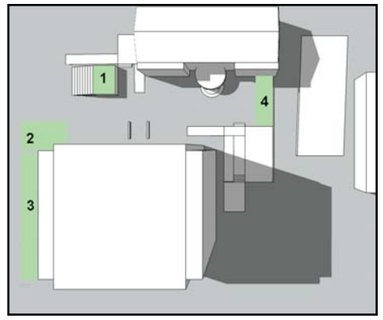


Fig. 37. Potential garden areas

Productive use of underutilized terrace and transitional corner

Greening the corridor

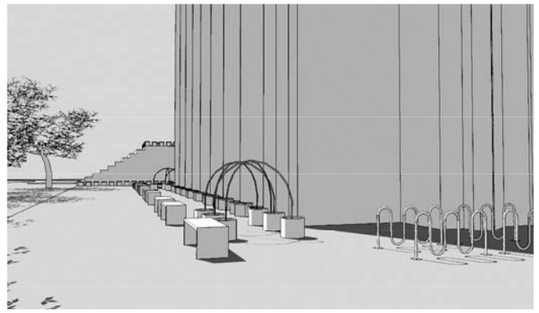
Cultivating a concrete strip

Fig. 38. Plan extension for the Edible Campus 2008

POSITIVE CONTRIBUTION

Promenade Through the Edible Campus

1



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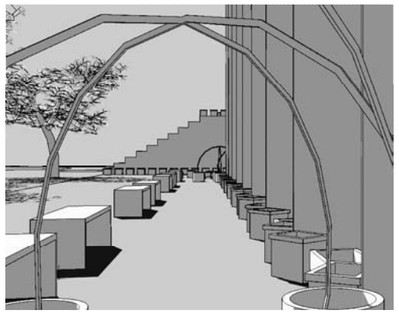
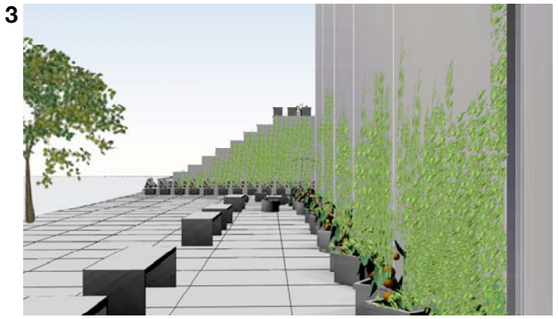


Fig. 40, 41. Perspectives of the corridor showing the layout of the containers

3



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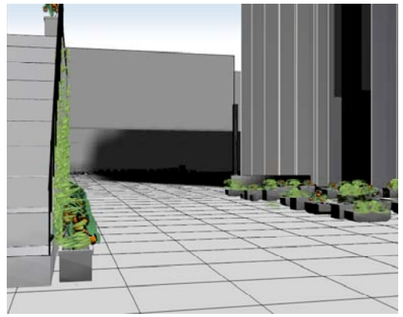

Fig. 42, 43. Perspectives showing concrete space transformed by container and plot growing

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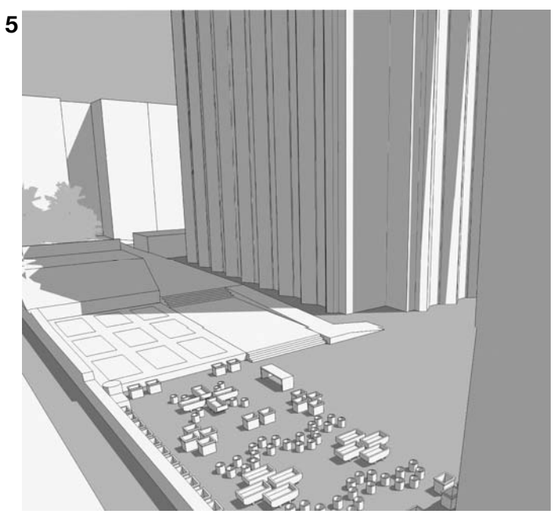

Fig. 44. Overall perspective of the concrete strip

Fig. 45, 46. Photomontages presenting vertical growing

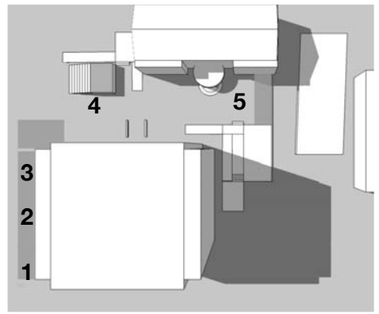

Fig. 39. Reference plan

This spatial sequence through the 2008 Edible Campus depicts an experience entering from McGill University's main downtown entrance, continuing through the corridor until the strip garden.

Fig. 47. Overall perspective of garden corridor and terrace

POSITIVE CONTRIBUTION

Winter Garden

Fig. 48. In winter, containers are gathered and stacked on the terrace into a compact area and do not obstruct pedestrian flow or block snow removal vehicles

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