Making the Edible Campus: 
A model for food-secure urban revitalisation


Abstract
The Edible Campus project was begun in spring 2007 in Montréal. An action-research project launched by volunteers and researchers from two leading local NGOs and university-based researchers (Alternatives, [online]; Santropol Roulant, [online]; McGill University’s Minimum Cost Housing Group, [online]), it sought creative solutions to turn underutilised urban spaces into productive places. It involved citizens in the creation of green community spaces by incorporating productive growing in containers on a prominent but concrete-covered part of McGill University’s downtown campus. Not only is it an investigation into making cities more food-secure by increasing urban food production, it is also a live demonstration of how ‘edible landscapes’ can be woven into urban spaces without diminishing their utility or functionality.

Keywords: Design, Sustainability, Urban Agriculture, Food Security.
INTRODUCTION

When presented with the prospect of growing food within the city or in periurban areas, decision-makers such as elected officials and design professionals (planners, urban designers, and architects) often raise doubts. Among the main arguments against growing food in the city is the high cost of urban land, which renders it too valuable to be used for agricultural purposes. Yet a closer scrutiny of North American urban landscapes reveals many overlooked, underutilised, and neglected areas in general and, for instance, within commercial, institutional, and industrial complexes. Our premise is that these spaces can be put to productive use. We do not mean for these liminal spaces to be ploughed over and covered with waving fields of wheat, but instead propose to develop more context-appropriate and case-specific growing solutions to exploit these urban sites more effectively. Like the ‘Victory Gardens’ of the Second World War or increasingly-popular community allotment gardens, we see liminal spaces playing a significant role in making cities more food-autonomous.

Problems of food security are probably underestimated in Western cities but evidence suggests that they are widespread and growing. For example, in Montréal, Canada’s second most populous city-region, one citizen in six is affected by food insecurity; it is mainly the poor, the young, and those of child-bearing age who frequent food banks (Comité Famille de la CRÉ de Montréal, 2007). Another significant food-insecure group comprises individuals with mobility impediments (Lister, 2007). To provision these groups is not easy, and doing so demands the development of creative design responses operationalised through strategic management models. Our Edible Campus project explored this challenge empirically and with the intent of setting a good example of how urban space can easily be adapted for urban horticulture in a cost-effective and enduring manner.
SITE SELECTION, ANALYSIS, AND DESIGN

For any pilot project, it is important to identify generic sites that will visibly demonstrate the potential of the initiative. In our case, several locations on the university’s downtown campus were considered: the rooftops of large buildings, 'leftover' open spaces, and concrete-covered plazas including one in front of a 13-storey pavilion called Burnside Hall (Figure 1)—a classic example of 1970s institutional architecture (for more information on this project, see McGill University, Virtual McGill).

Site selection comprised two steps: the identification and analysis of potential intervention zones, followed by the development of strategies to transform underutilised hardscapes. A closer examination of the plaza in question revealed about 3200 m² of potential growing space (Figure 2). That this exists in a prominent location in downtown Montréal is a case in point of how cities are replete with sites and spaces in which narrowly-defined short-term needs trump more compelling aesthetic, social, and ecological considerations for inhabitants and their surroundings. Our design team reckoned that such a platform could literally provide some architectural food for thought in the midst of a conventional North American urban dis-
Once the Burnside Hall plaza was identified as a potential site, an initial design proposal for an experimental garden was developed by the team of researchers and designers based on discussions with our NGO partners and the relevant administrative unit of the University (the Office of Planning and Institutional Analysis). Final approvals by these parties meant meeting several criteria: (1) the host institution's regulations and security requirements; (2) the NGO requirements for adequate growing spaces to which volunteers could have easy access, a workshop area to accommodate participants, the presence of a fixed water supply for watering the plants, a storage area for garden supplies as well as volunteer belongings, and a visually prominent site; and (3) the needs of the plants themselves—in terms of available hours of sunlight (up to eight hours for tomato and eggplant in our nordic climate). This necessitated a series of sunlight studies, visualisation exercises, and photo-montage studies (Figure 3). These criteria eliminated several alternatives and helped to define the garden plan.

THE CHALLENGES OF VANDALISM

An obvious challenge both in terms of site selection and garden design was how to minimise vandalism. After some discussion, it was decided that the heavily-travelled Burnside Hall plaza would be the site of the Edible Campus—an open garden deliberately inserted in a very public place so as to minimise vandalism and sabotage by taking advantage of passive surveillance. A more concealed location, it was reasoned, would be subject to unwanted acts. Moreover, the Edible Campus was conceived both as a garden and a renewable event that aims to relieve the concrete monotony by providing a welcoming transit space in which, and through which, members of the university community and inhabitants of the surrounding city neighbourhoods would walk, gather, work, relax, and so on. This enabled a strong sense of public ownership of the garden, reducing if not altogether eliminating the risk of vandalism.

DESIGNING FOR URBAN HORTICULTURE IN A COST-EFFECTIVE AND ENDURING MANNER

Above and beyond design, the transformation of underused spaces into productive places also requires judicious selection of low-cost and appropriate tools that are strategic and operational as well as physical. Consider for instance the logistics of gardening. It is important to know beforehand who will help set up the garden and who will look after it once it is operational. Where these endeavours are made the responsibility of the formal sector—i.e., paid maintenance workers—a range of additional local or institutional resources will be needed. These are, however, usually limited and hard to augment. Instead, the Edible Campus project took advantage of community involvement in the process. This in turn means that the project must be based on design-build strategies that are simple, scalable, and easily reproducible. This avoids unnecessary mistakes and produces quick results, which brings added participation, further strengthening the project (Bhatt et al., 2008: 75-84).

To facilitate and speed up growing food in the city, the Edible Campus was conceived as a project with four key characteristics: it is modular, mobile, seasonal, and scalable as a 'do-it-yourself' project, and most importantly it sought to show designers that edible plants can be used as architectural materials—in other words, that vegetation (and biomass more generally) should play a pivotal role in the design of places as a way to help transform urban spaces rapidly and inexpensively. All of these are critical considerations from the point of view of strategic planning, implementation, and maintenance of the project; in turn, they also influenced the physical design.

Modularity

The basic building unit of the garden is the portable container, which holds and supports the edible plants. Their design was developed and refined by Alternatives, one of our NGO partners, which also sells them to the general public. These planter boxes are made from salvaged containers and recycled plastic. In 2007, the Edible Campus comprised 123 growing containers of seven different types; 63% were made from reused buckets or barrels, and 35% were made of recycled plastic. Less than 2% were newly-designed containers. The generic design of the planter box remained the same in all cases, as illustrated in the following sketch (Figure 4). This semi-hydroponic technology consists of easy-to-find materials: a standard recycling box, plastic sheets (E) and a 30cm length of an ABS pipe (A). Assembling the ecological planter is simple, and its components keep the container
relatively lightweight. Watering is done through the pipe (A) with the help of a funnel, a water reservoir (D) which reduces the frequency of watering cycles, and an overflow tube (C), which prevents chances of root-rot. The planter is both a low-cost and low-maintenance gardening device. Its design is such that it can easily be understood and used by non-experts for use on private balconies or terraces.

To the existing onsite urban furniture-fixed benches, bike racks and lampposts-the Edible Campus added a supplementary layer of growing containers, water storage barrels, temporarily used salt storage boxes as storage space for tools and supplies, and compost bins which featured ecologically-friendly materials, all of which became part of the university landscape.

**Mobility**

An advantage of a containerised garden, particularly using small plastic tubs or buckets, is that it can be moved around and improved upon year after year. In regions where severe winters limit the growing season to one harvest per year, such as Montréal, these containers can be stored during the dormant months in out-of-the-way places without much difficulty. For the purposes of setting up the garden, the planters can be arranged and reconfigured if required while the garden is being laid out, which is in fact what was done when the Edible Campus was set up. The entire 110m² garden was set up in just one day in late May of 2007 by a crew of volunteers. The containers were delivered by truck and assembled on-site; the soil mixture was prepared, and the containers were filled and put in place (Figure 5).

**Seasonality**

One of our NGO partners, the Alternatives team, took the primary responsibility for maintaining the garden. Through an email list, volunteers are kept
informed of the garden’s activities, upcoming events, and information about how they can get involved in regular activities, notably the everyday maintenance of the garden. The garden is tended three times a week, in three-hour sessions during which volunteers help water, weed, and harvest the produce. On Saturdays volunteer parents are encouraged to bring their children to the Edible Campus so that young people can also participate in the gardening activities in a structured way.

Through this community-volunteer partnership, the university’s maintenance staff did not need to do any additional work. Spring marked the installation of the garden, followed by the planting; early summer hosted growing activities; late summer and early autumn brought the harvest; mid-autumn (at the end of October) marked the closing of the garden, when the paved areas were cleared for winter, the containers gathered and stored for the next season by being placed on the terrace in a compact area where they would not obstruct pedestrian flow or impede snow removal processes.

**Scalability**

The 2007 garden comprised 123 ecological growers and covered two paved areas: an underutilised rooftop terrace and one corner of a plaza space at grade. Although the initial garden was limited to an area of 110 m², the aim of this initiative was to expand the garden and respond to the NGO’s need for organic vegetables. In the enlarged 2008 installation, two additional portions of the plaza were identified: a redundant open-air corridor and a paved ‘cul-de-sac’ strip on the plaza.

**Edible plants as architectural materials**

The Edible Campus could not be described as an architecture project were it not for the attention paid to design and materiality. A range of plants were selected for their sensory qualities (aesthetic and otherwise) and used as architectural materials through cultivation. In effect, a dynamic second skin was added to the site-materials that interacted with and reacted to seasonal variations in climate, responding to the local environment and its ecosystems in a somewhat stochastic, non-fully-deterministic manner. The urban core, with its preponderance of asphalt and concrete, was thus transformed with a living layer.

The biodiversity of the McGill campus was enhanced by the presence of the Edible Campus; the garden’s participatory character and social and aesthetic functions were strengthened through the selection of 26 different edible plants rather than the usual decorative species. Among the fruits, vegetables, edible flowers, and herbal plants deliberately chosen were arugula, basil, bok choy, broccoli, cantaloupe, celery, cherry tomatoes, chives,
cilantro, cucumbers, dill, edible flowers, eggplant, green beans, green peppers, ground cherries, lettuce, leeks, mint, onions, parsley, squash, Swiss chard, Thai basil, and tomatoes (Figure 6). The sensory qualities of the McGill campus were transformed with stimuli for sight, smell, and taste.

**DESIGN FOR FOOD SECURITY**

According to Nourrir Montréal, a local policy advocacy group, food security can be said to exist when nutritious and healthy foodstuffs are available to all inhabitants at affordable prices. Their definition also specifies that foodstuffs should be culturally acceptable and their method of production and distribution durable (i.e., sustainable). In addition, they consider that food security is also based on the solidarity within the community that enables people and family living in poverty and isolation to feed themselves well while contributing to the development of the entire community (Nourrir Montréal, 2007: 3). Unfortunately, in Montreal, one person in three is considered poor which implies the risk of not having access to a healthy diet (Forum régional sur le développement social de l’île de Montréal, 2004: 8). A recent study undertaken by the Dispensaire Diététique de Montréal estimated that a household with two parents and two children had to spend a minimum of $730 / month to ensure that it had a nutritious food supply. Yet as highlighted by Nourrir Montréal, more than half the city’s impoverished households cannot afford this because of the proportion of their net income that must go to paying for housing (Nourrir Montréal, 2007: 4). Moreover, the Direction de la santé publique demonstrated that 40% of Montreal’s population does not have access to fresh fruits and vegetables within reasonable walking distance (defined as no more than 500m). When one considers individuals with mobility impairments, such a distance is difficult or almost impossible to travel; their dietary plight only adds to widespread problems of social isolation (Nourrir Montréal, 2007).

Santropol Roulant, one of two NGO partners in this project, is involved in meeting the daily healthy dietary needs of the mobility impaired in Montréal. Each day, healthy meals are prepared in Santropol Roulant’s collective kitchen using fresh ingredients and then delivered to clients with mobility impairment with a view to reducing their social isolation while enriching their diet. Typically, eight volunteers deliver approximately 90 meals per day; most by foot or by bicycle. The Edible Campus was conceived as part of this food chain. The fresh organically-grown produce on the Edible Campus is harvested by volunteers to be transported on foot or by bike to the Santropol kitchen. Records of the daily harvest for the 2007 season were maintained; when produce was being harvested in August and September, almost 30% of daily need of the kitchen in terms of fresh produce was met by the Edible Campus. Moreover, the kitchen waste at Santropol Roulant is composted–returned to the Edible Campus site, completing the entire food cycle. In effect, the Edible Campus produce was more economical than any commercial equivalent in the downtown core, by way of (i) cheaper materials used, and overall lower capital and operating costs; (ii) the proximity of the end-users; (iii) the time donated by volunteers who tended the garden. One must not overlook indirect benefits to the less affluent recipients of the produce of the garden, who are able to use the funds that would otherwise be used for food to instead attend to other equally urgent primary needs.

**LESSONS LEARNED**

Integrating productive planting in educational institutions, more specifically universities in Canada and the U.S., is a growing phenomenon. Several projects have appeared on university campuses, but these have been limited in scope as they address only the food needs of the university community (Yale Sustainable Food Project, [online] and Garden Project at Princeton, [online]). Often the focus is strictly or mostly environmental with a consequent disregard for sustainability through social cohesion. In contrast, our Edible Campus project is noteworthy on at least three fronts: 1) Undertaking the greening of cities through design and openness; 2) Going beyond ornamental to multifunctional greening; and 3) Involving action-planning and community engagement for the upkeep and maintenance of the garden.

**Greening cities through design and openness**

By way of the very space it occupied, its ephemerality and temporality, the Edible Campus was informed by the core principle of openness. Etymologically, the term ‘garden’ is derived from German and it is therefore associated with enclosure which render them unevenly accessible and often static and/or immobile. Rather, the complete
openness of the Edible Campus conveyed the concept of a space under constant flux that evolves, grows, and decays alongside its human interlocutors and other elements in a dynamic interplay. This openness may have originally been misinterpreted as vulnerability, but in the five-month period it operated, the garden faced minimal theft and no vandalism. Instead, the Garden embodied civic responsibility, trust, and equity—all elements of healthy democratic participation and joint action focusing on collective benefits. Far from becoming a hindrance or liability, the openness kept attracting and engaging numerous volunteers who assumed a share of responsibility in caring for and operating the Garden (Figure 7).

**Design for multifunctionality**

The Edible Campus was not planned as a restricted productive space. On the contrary, it was inserted carefully in a well-travelled space on the campus without hindering its utility while seeking to create new synergies to accommodate different functions. In addition to the dual function of the project, other functions were also integrated within the garden space, such as a sitting area with high concentrations of individuals surrounding the gardens, especially during lunch breaks. As McGill University’s buildings are non-smoking environments, a wind-protected corner of the Burnside Hall plaza used by many smokers was made more comfortable by the presence of the wooden compost bins of the Edible Campus, which conveniently doubled as benches. In broader terms, the garden served as an educational space for members of the NGO’s network interested in attending workshops scheduled and given by Alternatives and their partners, and it was a source of inspiration for McGill University’s architecture and urban planning students who undertook independent studies into use, perception, and the design of its expansion. Workshops were organised to reconnect children with edible plants and make them learn about the principles and processes of food-growing. In the process, children also contributed to the maintenance of the garden (Figure 8).

**Community engagement as an enduring element of sustainable design**

In the framework of this project, design was not a linear process (restricted to the conventional way of composing a project with an architect and a client); conversely, it used integrated participatory design processes, bringing together different stakeholders at early stages—a multidisciplinary team including in this case university administrators, two architects, a landscape designer, and several community leaders. Design also implied developing in partnership with the community which became an integral part of the design process.

In sum, the Edible Campus project is a successful investigation into making cities more food-secure by increasing urban food production, and it has served McGill University, the NGO partners, and Montréal well as a demonstration project for how ‘edible landscapes’ can be woven into urban spaces without diminishing their utility or functionality.

**CONCLUSION**

The Edible Campus project is not only a successful site-specific project; it is also one that can be replicated on similar such liminal sites. We suggest that it is a pertinent model for remaking cities while also providing added benefits such as better food security. Especially where existing soils may be contaminated, the use of portable containers makes pro-
ductive planting easier, and there is no shortage of ground planes where food-growing containers can be added: rooftops, plazas, slabs atop underground concourses, and so on. In the McGill case, concerns over space being 'lost' to the planting boxes were aired at the outset by various decision-makers and observers, but if anything the very opposite proved to be the case: spaces and pockets that were unused and often ugly have now become focal points for activity and site amenities. Naysayers have been converted in the process, and indeed rave about how pleasant the spaces have become.

Perhaps the most telling aspect of the Edible Campus project has been its demonstration effect in terms of working with the institutional frameworks which thwart if not altogether prevent the implementation of urban agriculture. The university administration can be seen as a microcosm of other institutional structures such as municipalities, condominium associations, school boards—all instances in which concerns over liability or adverse fiscal impacts tend to be trotted out as reasons making the project unreasonable or impossible. In effect, the biggest project-specific constraints are time and space availability including especially a handy supply of running water. The biggest barriers are attitudes are perceptions, underlining the importance of demonstration projects.

With a very modest investment of resources, an excellent and instructive project was realised. The capital investment required was minimal, and the operating costs can be kept low so long as there is a coordinating team and a (volunteer) network of workers. Such was the case with the Edible Campus, where maintenance is taken care of by a large group of volunteers, for whom it is a pleasant pastime that tends to radiate positively—passersby take an interest and get involved. Indeed, the location of the Edible Campus garden in a well-traveled public spot is one of the factors accounting for its success, as well as helping to ensure that there was next to no vandalism. It has great potential in terms of enabling passersby to learn about ecological processes, food growing, the power of social cohesion, and other important considerations. These are not insignificant given the enormous challenges faced in cities—and what started out as a small project can thus be seen as a readily-transferable example of how edible landscapes can be woven into urban spaces without diminishing their utility, functionality, or appearance.

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