2020

Food park

Houria Boumzairig

Follow this and additional works at: https://scholarscompass.vcu.edu/etd

Part of the Interior Architecture Commons

© The Author

Downloaded from
https://scholarscompass.vcu.edu/etd/6327

This Thesis is brought to you for free and open access by the Graduate School at VCU Scholars Compass. It has been accepted for inclusion in Theses and Dissertations by an authorized administrator of VCU Scholars Compass. For more information, please contact libcompass@vcu.edu.
Houria Boumzairig
MFA in Design - Interior Environments
Virginia Commonwealth University 2020

FOOD PARK
AN URBAN FARMING WELCOME CENTER

Houria Boumzairig
MFA in Design - Interior Environments
Virginia Commonwealth University 2020
Table of Contents

03 Declaration
04 Topic statement
05 Abstract
07 Research
09 Case studies
17 Site
20 Building orthographics
22 Project statement
23 Concept statement
25 Diagramatic studies
33 Program
35 Plan
36 Sections
38 Stairs details
42 Design
57 Bibliography
58 Acknowledgments
As a designer, I will:

- Believe in myself fully, if one ever wants to do anything new or innovative one has to bring those ideas to life against a lot of opposition and conflicting opinions.

- Constantly seek out and share innovative ideas, viewpoints, processes and technologies so that I never stop learning.

- Always ask ‘why’ to understand the purpose, cause and belief behind every decision.

- Take accountability of all the details, everything is my job, nothing is beneath me.

- Be part of something bigger than myself, something that will make an important difference to the lives of others.

"It is the nature of humankind not only to use spaces but you fill them with beauty and meaning"
Technology and advances in society are affecting current thinking related to mobility, traffic, transportation, and parking. What will the future hold? Will parking demands increase, decrease, or simply change? What if parking structures could be designed to not only handle current needs but also adapt to better meet the evolving needs of communities in the future?
Abstract
If climate change and population growth progress at their current pace, in roughly 50 years farming as we know it will no longer exist (Despommier, 2009). This means that the majority of people could soon be without enough food or water. But there is a solution that is surprisingly within reach: Move most farming into cities, and grow crops in tall, specially constructed buildings. It’s called vertical farming. “There is a close relation between the beginning of agriculture and the birth of architecture. Our cities were shaped by food” (Precht, 2019).

The agricultural revolution ended our presence as hunters and gatherers, with grain as a stable food source that allowed us to permanently settle and form communities. Farming and living were interconnected — they needed to be in proximity due to a lack of efficient transportation and refrigeration (Precht, 2019). All ancient settlements were dense areas centered around farmlands. Today, with transportation and new technologies, living and farming became disconnected. Corporate farms shifted our community sense and disconnected us from our roots with food. This work aims to connect us back to it, and have food and farming influence the way we design our buildings again! Furthermore, climate change is forcing us to rethink our way of life. We can incorporate sustainable solutions in many different ways but this research focuses on urban agriculture, the goal is to introduce this concept more to our cities and especially around the university student populations which will constitute the future generation of decision makers.

Growing food in the city means it is closer to where it is consumed, so it stays fresh longer and generates less loss for the businesses that use or sell it. Urban farming operations train and employ local people, generate local tax revenue, supply local stores and restaurants, and encourage the consumption of local products—all of which are good for the local economy. In addition, any plant starts losing nutrients the minute it is harvested from the earth, which is why the sooner we eat the food, the better it will be for our health. Urban agriculture isn’t just limited to growing food on rooftops, it encompasses turning any place in a city into a productive source of food. Which is why this thesis aims to partially transform an existing parking deck into an urban farming learning center. The program focuses on community engagement by creating a space for innovative learning where users can interact with the farmers and plants, learn from and participate in the process through collaborative workshops, indoor gardens, forums for discussions and a mini food hall offering people fresh and local food in hopes of reconnecting agriculture back into our urban fabric and therefore reconnecting people back to their food. As designers we must strive to implement this concept locally so that in the next decades, our farms will once again tell a story of community!
Research

Fig 4: Second Home, Hollywood
Urban growth raises a variety of problems that tend to jeopardize the environment, economy, and social sustainability of cities (Neirotti, 2014). More specifically, the rapid urbanization of the world, albeit a symbol of social evolution, gives rise to many challenges associated with intense energy consumption, endemic congestion, saturated transport networks, air and water pollution, toxic waste disposal, resource depletion, social inequality, public health decrease, and so on. In a nutshell, the way forward for cities to better cope with the changing conditions is to adopt the long-term approaches that focus on sustainability (Bulkeley and Betsill, 2005).

Sustainable development in its simple definition is an approach to meeting the needs of the present without compromising the ability of future generations to meet their own needs. Therefore, it seeks to create healthy, livable, and prosperous human environments with minimal demand on resources (energy, material, etc.) and minimal impact on the environment (toxic waste, air and water pollution, hazardous chemicals, etc.), to draw on Bibri (2018). This overall goal entails fostering linkages between scientific and social research, technological innovation, institutionalized and organizational practices, and policy design and planning in relevance to urban sustainability.

Urban agriculture is not new or geographically isolated to the United States. The United Nations Development Program estimates that fifteen percent of food worldwide is grown in cities. Countries such as Cuba successfully used UA as a means to evade food shortages (Murphy, 2004), while many developing countries have long been farming within cities for income and subsistence. In the U.S., institutional efforts to accommodate and promote urban agriculture within U.S. cities are gaining momentum, especially in the last decade.

Universities serve functions besides training young people for future employment, they can also have roles in transforming society and creating more than just arrangements. This thesis will explore ways to incorporate sustainability in the everyday life of the students of Virginia Commonwealth University by creating an extension to the university on one of its parking decks, an adaptive reuse project to be an interactive learning center focused around Urban Agriculture.

Many public universities located in inner cities have adopted missions committing themselves to the improvement of their cities and regions, they also perform anchoring roles to revitalize their immediate neighborhoods, and, in a contemporary extension of their civic purposes, embrace sustainability as an institutional goal. Urban public universities can play a major role in leading to a more sustainable food system (Stein, Andrews and Isaac, 2004).

Brown, Sterling and Venable (2007) argue that when students engage in problem-based and experiential learning they become active participants in their own learning process. This is achieved by constructing their own internal knowledge framework through the social and physical context of their work. Therefore, authentic learning experiences are those that are personally relevant from the learner’s perspective and situated within appropriate social context.

In her chapter “Food for Thought: Moving toward sustainable dining”, Leah Bendell describes why she’s passionate about the application of knowledge to real life. Her students have engaged in learning by becoming aware of where their food originates, in particular, the energy cost of obtaining and processing that food, and the contaminant burden that particular foods carry.

For example, the author describes how a project which was initially intended to quantify the carbon footprint of the campus, resulted in addressing some of the university’s academic objectives by providing a hands-on learning opportunity for students. For many students, their involvement in the project fostered an interest in sustainability as they learned about carbon emissions and sequestration, arboriculture and biogeography. Shawn Smith, instructor at the Beedle School of Business in Canada, reports that the most powerful outcome a student can gain through a social venture project is a sense of responsibility. Similarly the aim of this thesis is bring an innovative way of learning that blurs the lines between fun and education, and builds the sense of innovation and creates new opportunities for learning.

A car park is a public facility, like a train station or an airport, where people change from one mode of transportation to another. A car park is an organism made up of a family of concrete slabs, deployed as floor plates, columns and ramps. The location and form of these elements result from a series of forces acting upon each other. This project seeks to focus on parking decks, these behemoth structures that take up space in our cities—often occupying desirable real estate that could be used for more than just parking cars! The aim is to explore new relationships between these buildings and the streets they occupy for a vision of future cities, explore the structural versatility of these heavy load bearing concrete edifices, the constraints of their particular code requirements for a combined commercial program and the aspiration to make it a space for community.

"There are 500 million parking spaces in the United States and [325 million] people," says Andy Cohen, co-CEO of Gensler. "Think about all that real estate, all that attention to parking, that could be revitalized and reused for the future of our cities." "There are 500 million parking spaces in the United States and [325 million] people," says Andy Cohen, co-CEO of Gensler. "Think about all that real estate, all that attention to parking, that could be revitalized and reused for the future of our cities."
DOMINION OFFICE

This building houses offices for companies in the growing creative IT sector in a primarily industrial and residential district in the city of Moscow. The big feature this thesis is looking at is the atrium and circulation between the different levels. The building is conceived as a series of vertically stacked off-set plates connected by a central atrium that rises through all levels to bring natural light into the centre of the building. Balconies at each level project into the atrium and a series of staircases interconnect through this central space in a diagonal crisscross fashion.

The black-and-white vertical space provides a shared area, working as a social ground among employees of various companies. Diagonal stairs connect the slabs, while a peripheral core layer – housing vertical shafts, staircases, and service areas – surrounds the atrium, "with gaps in-between these cores giving some transparency and allowing light to penetrate into the office areas from the central shared atrium space", the practice mentions. This service core ring around the atrium, together with an additional bay of columns close to the outer envelope of the building, provides the structure. The off-set floor-plates are balanced between the opposite sides of the building. In some zones, columns are removed and replaced with transfer beams to increase the uninterrupted floor space for larger tenants or public programmes.” – Zaha Hadid Architects explain.
The shape of the building is intended to evoke a chinook – a natural atmospheric phenomenon that occurs in the region, which results in dramatic arched cloud formations. The arch shape is reflected on building’s underside, providing a new connection between Downtown Calgary and the developing East Village neighbourhood.

The standard elements the designers, Norwegian/ American firm Snøhetta and local studio Dialog, use include a sharp and distinctive exterior; the soaring and sky-lighted atrium that is also a stair hall, from which you can see all the main levels; a broad and inviting set of steps and ramps under a sweeping canopy that invites you to come into the building.
From the covered entrance, visitors arrive into a huge skylit atrium in the centre of the building. The space is shaped like an eye, or a canoe – a reference to Canada’s First Nations people – in plan, and is lined almost entirely with hemlock wood slats. Covering walls, staircases and balustrades up the roof, the material provides a warm aesthetic and helps to control the acoustics in the cavernous atrium.

"As soon as you come in, there's a feeling of a forum or a great collection hall," Snøhetta founding partner Craig Dykers told Dezeen. "A place where people from different groups can come together."
fig 15: Section

fig 16: Plan
This Cleft House is split in two by a full-height skylit atrium. Intended to echo the central courtyard of traditional Indian homes, the atrium forms the heart of Cleft House, and connects all the communal spaces on the ground floor. Its size and form also ensures there is ample natural light throughout the house and its basement, while also facilitating natural ventilation.

In order to ‘soften up the rigidity of the faceted geometry’, Anagram Architects has also incorporated a grand spiral staircase on one side. Along with the elevator on the opposite side, this provides access to the private spaces.

Location - New Delhi, India
Year - 2018
Design - Anagram

A “breached monolith” hides a giant light-filled atrium at the heart of this Indian house, which Anagram Architects has completed on a busy street in New Delhi. Named Cleft House, the four-storey dwelling is for three generations of the same family that wanted a spacious, light-filled home on a dense site close to their factory.

To achieve this while maintaining their privacy, Anagram studio built a stark windowless facade that shields the sun-drenched four-storey atrium inside, around which all the rooms are nicely positioned.
Site

VCU WEST BROAD PARKING DECK

Street Address: 1025 W Broad St Richmond, VA
Alternate Street Addresses: 1111 W Broad St
Owner: VIRGINIA COMMONWEALTH UNIVERSITY
Property Class: 490 - B Parking Deck
Zoning District: B-4 - Business (Central Business)
EXTERIOR IMAGES

Exterior view from Broad Street.

Exterior façade- View from Broad Street.

Exterior view from Shafer Street.

Broad Street Entrance point.

Exterior view of an elevator.
INTERIOR IMAGES

Parking spots, open facade, low ceilings.

Metallic staircase.

Windows of the upper parking floors.

Ground floor - Existing book store.

Higher ceiling, large uninterrupted spans

View from back entrance.
EXISTING DRAWINGS

- Vicinity map
- Shafer street elevation
- Harrison street elevation
- Transverse section
- Longitudinal section
Levels 02 to 06 - Typical Floor Plan
1" = 0" = 1/40"

Level 01 - Floor Plan
1" = 0" = 1/40"
This project aims to reconnect food and farming back to our cities. It celebrates sustainable practices through healthy food and education on urban agriculture, it explores a space that invites people to engage in public discussions around food sustainability and other issues that are threatening the balance of our local environment.
This idea stems from the cyclicity of the natural environment. The concept is specifically inspired by the plants cycles that grow from seed to tree and so on so forth. Thinking about the forms and shapes that a cycle can take, from abstract processes to concrete shapes and forms that will translate to architectural elements for visual reminders. Their ability to morph and adapt represents our own ability as humans in adapting to challenges and offering creative solutions. Cyclicity can be explored through curves in different scales and forms that inform the ceilings, walls, benches... It challenges the Parking deck building radically, in its orthogonality, rigidity and hard surfaces, instead introducing playfulness and softness to the space.
Concept

A CYCLE

These curved geometries will inform the space planning, the shape of walls, floors, ceilings... in the project.
SUNLIGHT STUDIES

Building analysis to figure out which part gets the most sunlight to build the program.

The building is relatively dark with its low ceilings and concrete façades. One of the solutions is to create an opening in the slabs to allow more daylight inside the building.
Based on Sunlight studies, the South-Eastern quarter of the building is where the most sunlight hits. To take advantage of the sun for the Urban farming needs, the project should be located on the South-East.
ATRIUM
A series of parti diagrams as an early tool to shape the atrium
A series of clay models to explore the different options to stack the atrium openings

Option 1

Option 2

Option 3
CIRCULATION

Axonometric - Atrium

Axonometric - Stairs inside the Atrium
CLOSED TUBE FACADE

Closing the open gaps with a two-layered glass facade, wherein air flows through the intermediate cavity. This space acts as insulation for a controlled interior climate allowing the space to be conditionned, sheltered from winds, rain, exterior sounds...
Fig 23: Double skin facade ventilation system

Fig 24: Quartier des Spectacles - Montréal, Canada.
Acoustically and thermically isolating interior walls around the project scope, to separate from the car ramps and parking area. In order to keep out the noise, pollution and heat caused by the latter.
Program

Reception + Seedbank
Quantity: 1
Occupancy class: A-2
SF allowance per occupant: 20 net
Occupant load: 25
Area: 500
Net area: 500
Visual privacy: low
Accessibility: yes
Daylight: yes

Located on the secondary entrance, the seedbank reception is to welcome new visitors, and spark their curiosity about the space with the displayed seeds.

Forum
Quantity: 1
Occupancy class: A-2
SF allowance per occupant: 15 net
Occupant load: 25
Area: 1500
Net area: 1500
Visual privacy: no
Accessibility: yes
Daylight: yes

A public gathering space for anyone to sit and rest, meet with others, engage in discussions around the activities they did in the space together… separated by a screen from the hallway used by staff to access the kitchen.

Juice bar
Quantity: 1
Occupancy class: A-2
SF allowance per occupant: 20 net
Occupant load: 25
Area: 500
Net area: 500
Visual privacy: low
Acoustic isolation: medium
Accessibility: yes
Daylight: yes

The central element of the floorplan, a big elliptical bar serving fresh farm to table juices and beverages to the visitors, located under the atrium to make the users feel connected to the skylight and plants above.

Library
Quantity: 1
Occupancy class: B
SF allowance per occupant: 10 net
Occupant load: 10
Area: 100
Net area: 100
Visual privacy: low
Acoustic isolation: low
Accessibility: yes
Daylight: yes

A small library and reading corner, for a calm and quiet break. It’s pushed to the back of the floorplan to reduce visual and acoustic noise, though it’s not meant to be an entirely closed space.

Dining area
Quantity: 2
Occupancy class: A-2
SF allowance per occupant: 15 net
Occupant load: 30
Area: 450
Net area: 450
Visual privacy: no
Acoustic isolation: no
Accessibility: yes
Daylight: yes

Public dining table to enjoy food looking over trees and street views.
<table>
<thead>
<tr>
<th>Location</th>
<th>Quantity</th>
<th>Occupancy class</th>
<th>SF allowance per occupant</th>
<th>Occupant load</th>
<th>Area</th>
<th>Net area</th>
<th>Visual privacy</th>
<th>Acoustic isolation</th>
<th>Accessibility</th>
<th>Daylight</th>
<th>Plumbing needs</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Animation room + Lounge</strong></td>
<td>1</td>
<td>B</td>
<td>200 gross</td>
<td>10 net</td>
<td>300</td>
<td>300</td>
<td>high</td>
<td>high</td>
<td>yes</td>
<td>no</td>
<td>no</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Kitchen</strong></td>
<td>1</td>
<td>B</td>
<td>200 gross</td>
<td>20</td>
<td>4000</td>
<td>2000</td>
<td>high</td>
<td>high</td>
<td>yes</td>
<td>no</td>
<td>no</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Admin space</strong></td>
<td>1</td>
<td>B</td>
<td>100 gross</td>
<td>6</td>
<td>600</td>
<td>200</td>
<td>high</td>
<td>high</td>
<td>yes</td>
<td>no</td>
<td>no</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Restrooms</strong></td>
<td>3</td>
<td>B</td>
<td>300 gross</td>
<td>10</td>
<td>3000</td>
<td>1000</td>
<td>high</td>
<td>high</td>
<td>yes</td>
<td>no</td>
<td>yes</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Storage</strong></td>
<td>2</td>
<td>5-2</td>
<td>300 gross</td>
<td>4</td>
<td>1200</td>
<td>400</td>
<td>high</td>
<td>low</td>
<td>no</td>
<td>no</td>
<td>no</td>
</tr>
</tbody>
</table>

*Animation room + Lounge* - A microcinema for educational shows and documentaries about farming and sustainability, with free to public scheduled sessions.

*Kitchen* - Common kitchen for the farm-to-table style restaurants that serve the dining area.

*Admin space* - No description provided.

*Restrooms* - No description provided.

*Storage* - No description provided.
Space planning

Conceptual space planning diagrams

Concept

Finalized Plan
Sections

Longitudinal section

nts
Stairs details
Perspective view from the first floor
Perspective view from the middle levels
CURVED SEATING

Sushi by La cividina
References:

Precht, C. (2019). We need agriculture back in our cities and minds.

Image Credits:

fig 1: Living wall by Dirtt, retrieved from www.dirtt.com
fig 2-3: Retrieved from https://www.dezeen.com/2018/07/05/museum-garage-parking-facility-miami-design-district/
fig 4: Second home in Hollywood, images retrieved from https://secondhome.io/location/hollywood/
fig 5: Retrieved from https://mgirecruitment.com/portfolio/people
fig 6: Retrieved from https://scbarfoundation.org/40993299_10156439595551487_34447492788764016640_o-copy/
fig 7 to 11: Dominion tower by Zaha Hadid architects, Images retrieved from https://www.zaha-hadid.com/architecture/dominion-tower/
fig 17 to 21: Cleft house in india Images retrieved from https://www.dezeen.com/2019/09/02/cleft-house-anagram-architects-indian-architecture-houses/
Acknowledgments

I would like to thank everyone who has helped me in the completion of this project, especially:

My parents: **Lahoucine Boumzairig** and **Najat Afridou**
**Shani Zeng**, MFA
**Abbie Fundling**, MFA
**Alison Ho**, MFA
**Michael Lease**, ICA’s director of facilities

And the entire VCU Arts Interior Design faculty.