AMERICAN UNIVERSITY OF BEIRUT

FROM CAPTIVE BODY IN CONFINEMENT TO HABITAT 10.0

by
SIRENA MOHAMAD CHAMMAA EL RIFAI

An Undergraduate Architecture Design Thesis
submitted in partial fulfillment of the requirements
for the degree of Bachelor of Architecture
to the Department of Architecture and Design
of the Maroun Semaan Faculty of Engineering and Architecture
at the American University of Beirut

Beirut, Lebanon
May 2021

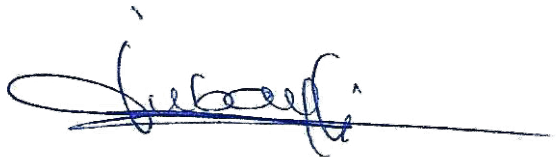
AMERICAN UNIVERSITY OF BEIRUT

FROM CAPTIVE BODY IN CONFINEMENT TO HABITAT 10.0

by

SIRENA MOHAMAD CHAMMAA EL RIFAI

Approved by:



Rana Samara, Senior Lecturer — Thesis Advisor
Department of Architecture & Design

Date of project presentation: May 11, 2021

AMERICAN UNIVERSITY OF BEIRUT

PROJECT RELEASE FORM

Student Name: CHAMMAA EL RIFAI SIRENA MOHAMAD

I authorize the American University of Beirut, to: (a) reproduce hard or electronic copies of my project; (b) include such copies in the archives and digital repositories of the University; and (c) make freely available such copies to third parties for research or educational purposes:

☒ As of the date of submission

☐ One year from the date of submission of my project.

☐ Two years from the date of submission of my project.

☒ Three years from the date of submission of my project.

26/05/2021

ACKNOWLEDGEMENTS

I would like to express the deepest appreciation to my thesis advisor Professor Rana Samara for her sincere guidance and help in completing this project. Her continuous support and immense knowledge helped me in all time of research and design of this thesis.

I am extremely grateful for my parents for their love, prayers, caring and sacrifices throughout the years. I would also like to express my thanks to my brother Tarek for his constant care and love.

At last, but not least gratitude goes to all my friends who directly or indirectly helped me complete this project. Thank you for pushing me to achieve my greatest potential.

ABSTRACT

Title: From BODY in CONFINEMENT to HABITAT 10.0

Whether we live in common apartments, in 30sqm, in the middle of a city or a town, alone or in company, we were “locked inside”. Our experience of the lockdown, unleashed responses varying from profound mental stress to romanticizing the “great correction” the pandemic has offered us. For many, the home transformed to an isolationist bunker that is independent from the rest of the world.

The aim of this thesis is to redefine the domestic space in the era of isolation by understanding the different existing states of confinement and our methods of adaptation.

After understanding what and how confinement is shaped, the project aims at designing a new way of living under the name of “Habitat 10.0”.

TABLE OF CON-TENTS

00

IN-
TRO-
DUC-
TION

Whether we live in a shared apartment, in 35sqm, in the middle of nowhere, alone or in company, we are “locked inside”. Our experience of the lockdown, unleashed responses varying from profound mental stress to romanticizing the “great correction” the pandemic has offered us. For many, the home transformed to an isolationist bunker that requires an off-grid independence.The aim of this thesis is to redefine the domestic space in the era of isolation by understanding the different existing states of confinement and our methods of adaptation.

In the future home, form will follow isolation.
In a context where we are all captive of our spaces, can we embrace the existence of the architecture of confinement and find a more pragmatic way forward? Alternatively, does our existence as captives within the city make the city itself become the prison?

01

DEFIN-
ING
ISOLA-
TION

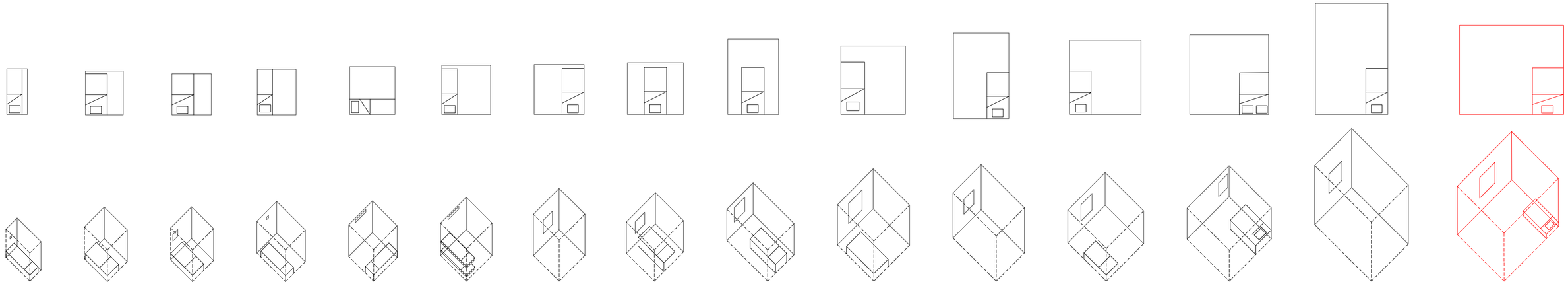
DEFINING ISOLATION

We live in times of uncertainty and question the future of the built environment around us. We are prisoners of the spaces we live in and have learned to adapt to this condition of isolation, wherever we are and no matter what the variants of our spaces are.

My experience of isolation might be different from someone else's. However, the common factor is that we are all prisoners of unit cells and can find our escape from one to find ourselves in another.

The analysis of the cell as a physical unit of isolation draws the conclusion that isolation is not merely an issue of area and volume. (Undocumented, 2019). By establishing a parallel comparison to the physical one, we learn that isolation is also visual, through windows sizes and digital, through the levels of connectivity with the outside world. The comparison of the ergonomics of a minimum physical habitable space and an inhuman uninhabitable one question what is habitable and what defines a healthy living environment where one can thrive emotionally, physically and mentally. (Panero & Zelnik, 1979)

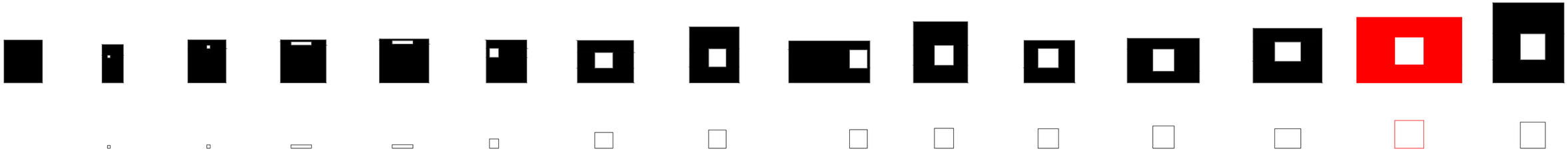
PHYSICAL ISOLATION



A= 2.0M²/PERSON V= 3.5M³/PERSON	A= 3.5M²/PERSON V= 3.4M³/PERSON	A= 3.5M²/PERSON V= 3.4M³/PERSON	A= 3.7M²/PERSON V= 7.3M³/PERSON	A= 4.6M²/PERSON V= 9.0M³/PERSON	A= 2.5M²/PERSON V= 4.9M³/PERSON	A= 5.3M²/PERSON V= 8.2M³/PERSON	A= 6.1M²/PERSON V= 11.9M³/PERSON	A= 8.1M²/PERSON V= 15.8M³/PERSON	A= 9.3M²/PERSON V= 18.1M³/PERSON	A= 10.0M²/PERSON V= 20.5M³/PERSON	A= 11.2M²/PERSON V= 21.8M³/PERSON	A= 14M²/PERSON V= 20.2M³/PERSON	A= 16.5M²/PERSON V= 30.1M³/PERSON	A= 20M²/PERSON V= 60M³/PERSON
DORMITORY CELL	EMERGENCY SHELTER CELL	EMERGENCY CAMP CELL	MULTIPLE OCCU-PANCY CELL	SINGLE OCCU-PANCY CELL	SHARED BUNK CELL	MONK ISOLATION CELL	HOSPITAL CELL	HOSPITAL SINGLE CELL	LONG TERM CARE OCCUPANCY CELL	MONK WORK CELL	LONG TERM CARE SINGLE CELL	RESIDENTIAL SIN-GLE CELL	MONK CELL	SIRENA'S DWELLING CELL
INCARCERATION	EMERGENCY	EMERGENCY	INCARCERATION	INCARCERATION	INCARCERATION	RELIGIOUS	HOSPITALIZATION	HOSPITALIZATION	HOSPITALIZATION	RELIGIOUS	HOSPITALIZATION	RESIDENTIAL	RELIGIOUS	RESIDENTIAL

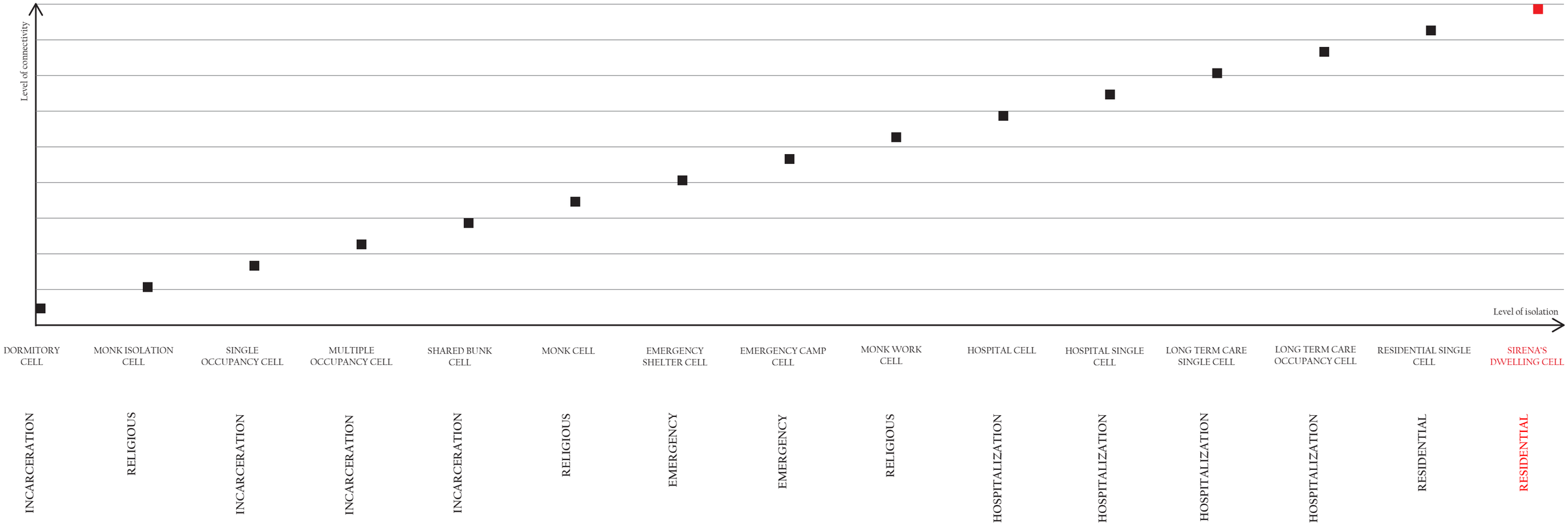
International Committee of the Red Cross ' water sanitation, hygiene and habitat in prisons' (2005)
Julius Panero and Martin Zelnik, "human dimension & interior space" (1979)
Ministry of Health and Long Term Care "Long term care home design manual" (2009)

VISUAL ISOLATION



Aw= 0.00M²	Aw= 0.01M²	Aw= 0.02M²	Aw= 0.14M²	Aw= 0.15M²	Aw= 0.17M²	Aw= 0.60M²	Aw= 0.66M²	Aw= 0.69M²	Aw= 0.79M²	Aw= 0.83M²	Aw= 0.99M²	Aw= 1.06M²	Aw= 1.33M²	Aw= 1.37M²
EMERGENCY SHELTER CELL	DORMITORY CELL	MULTIPLE OCCUPANCY CELL	SINGLE OCCUPANCY CELL	SHARED BUNK CELL	EMERGENCY CAMP CELL	HOSPITAL CELL	MONK ISOLATION CELL	RESIDENTIAL SINGLE CELL	MONK WORK CELL	HOSPITAL SINGLE CELL	LONG TERM CARE SINGLE CELL	LONG TERM CARE OCCUPANCY CELL	SIRENA'S DWELLING CELL	MONK CELL
EMERGENCY	INCARCERATION	INCARCERATION	INCARCERATION	INCARCERATION	EMERGENCY	HOSPITALIZATION	RELIGIOUS	RESIDENTIAL	RELIGIOUS	HOSPITALIZATION	HOSPITALIZATION	HOSPITALIZATION	RESIDENTIAL	RELIGIOUS

DIGITAL ISOLATION



MI NIMUM HABITABLE SPACE FOR AN INCARCERARED INDIVIDUAL

The minimum **physical habitable** space
for an incarcerated individual

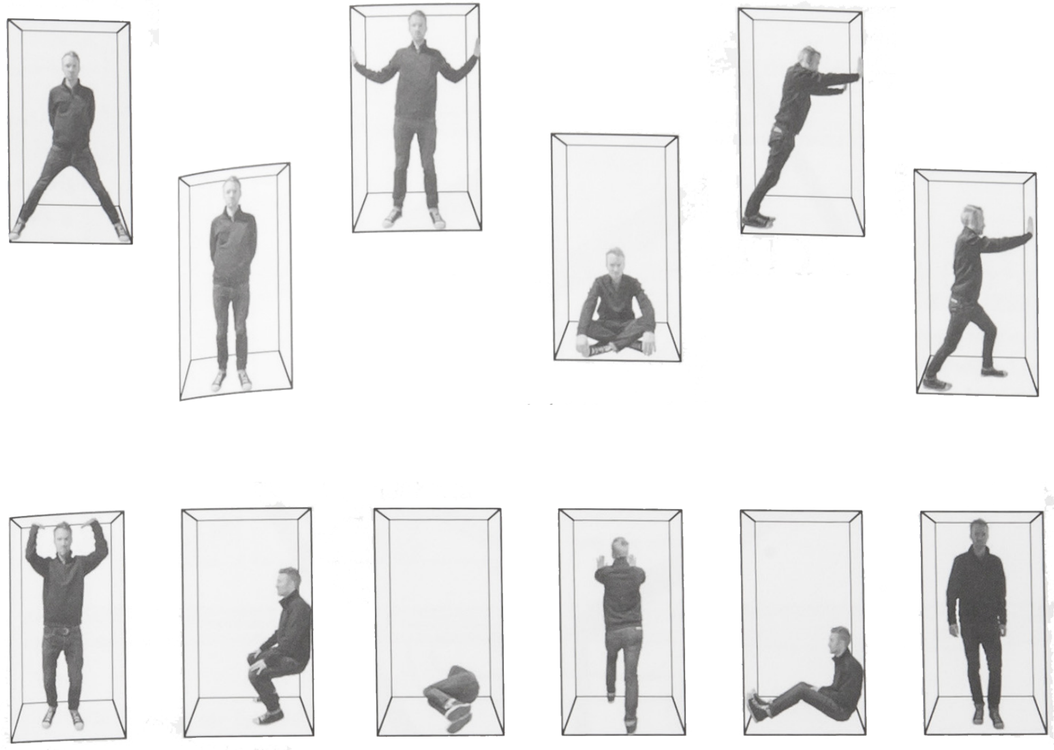
2M² OF FLOOR AREA

3.5 M³OF AIRSPACE

In this volume, the contents of your life are caged. But not every human action can be programmed or predicted, our bodies always find ways to carve out space, to refocus our attention from the geometry to the lived experience, from the container to the contained.

Undocumented: The Architecture of Migrant Detention. (2014). The Architecture Observer. Montreal/Amsterdam.

HABITABLE CELL ANALYSIS



MI NIMUM UNINHABITABLE SPACE FOR AN INCARCERARED INDIVIDUAL

The minimum **physical uninhabitable** space
for an incarcerated individual

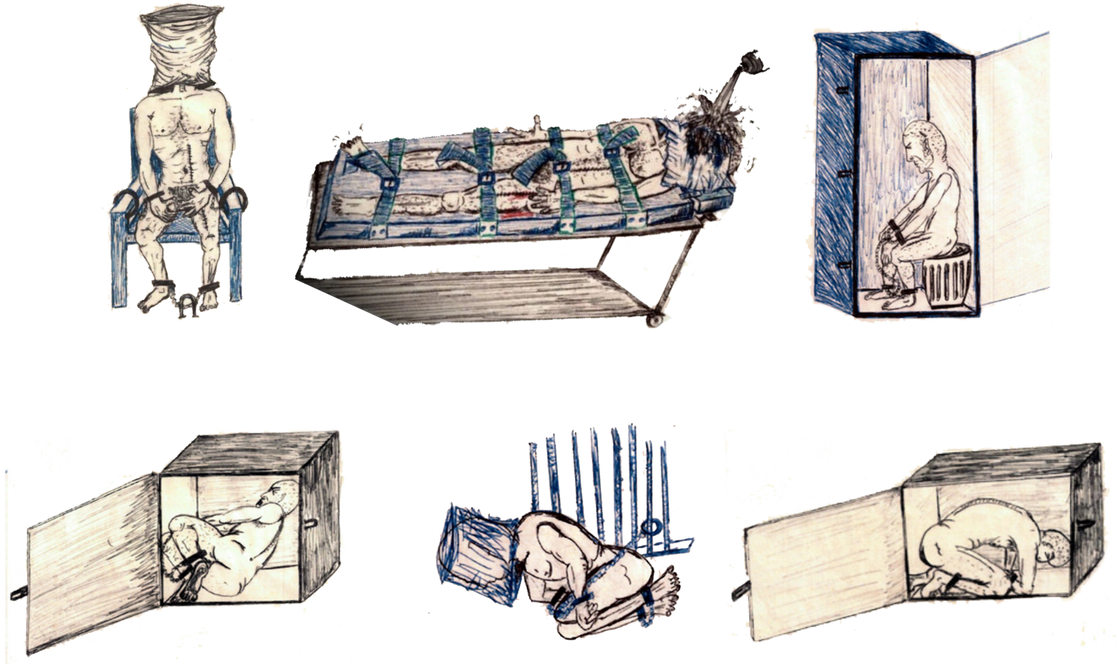
0.25M^2 OF FLOOR AREA

0.125M^{3}OF AIRSPACE

The torture methods used in the Guantanamo Bay prison are a great example of how uninhabitable a space can be. In this condition, not only is the body distorted to a space where it does not belong but there is also a distortion of the mind.

Rosenberg, C. (2019, December 04) .What the C.I.A.'s
Torture Program Looked Like to the Tortured.
Drawings by Abu Zubaydah, Courtesy Mark P. Denbeaux

GUANTANAMO BAY CELL



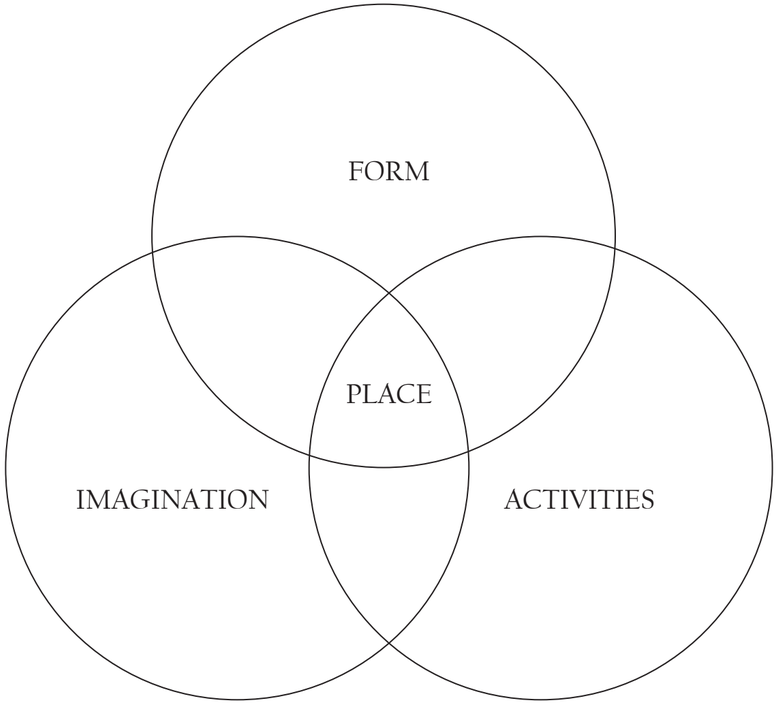
DEFINING A HEALTHY LIVING SPACE

DAVID CANTER'S MODEL

The well-known theoretical model of "David Canter", a pioneer of the conceptual studies in architecture and urban design, can be one of the theoretical frameworks capable of explaining the components of the urban design quality. Based on place type, the environment is a “place” consisting of three tangled dimensions “form”, “activities” and the “imagination” . According to the theory, the quality of design is the result of three components. Each component must meet one of the three conditions, "form", "activity" and the "imagination" of the city environment (Canter, 1977).

Canter, D. (1977). The psychology of place. London: Architectural Press.

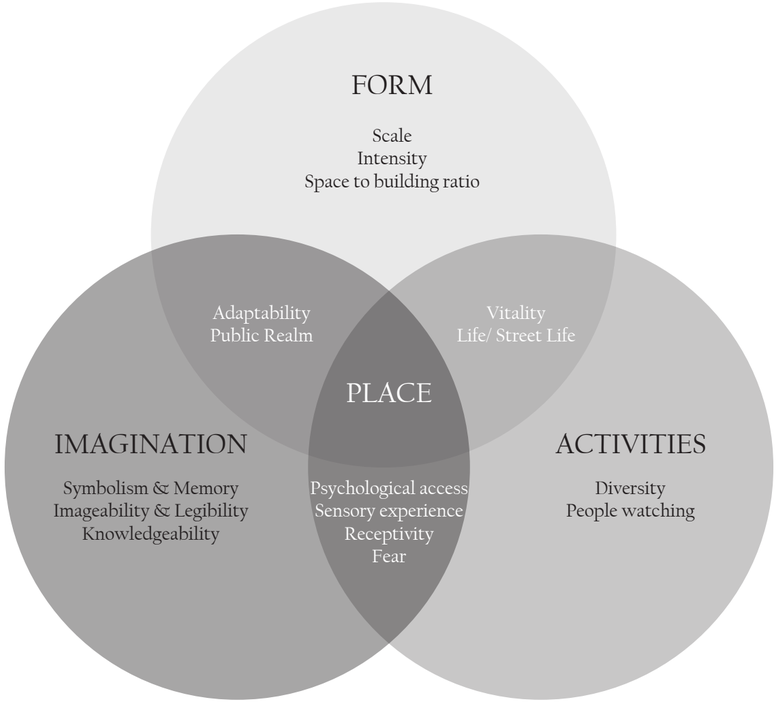
PLACE TYPE



SENSE OF PLACE

Sense of place is a concept that transforms a typical space into a place with special behaviour and sensory characteristics for people. This means that human beings connect themselves to the place by understanding the daily activities and symbols associated with it. Sense of place forms and develops when humans live or are in a certain environment.

COMPONENTS OF PLACE



SENSE OF PLACE

Sense of place represents the place as a **locus of attachment** by using 'inputs' (such as beliefs, attitudes, or other mental representations about a place) in order to create meaningful mental perceptions called 'outputs'. This process shapes the place identity, creates a place dependence, nature bonding and social bonding.
A second aspect is representing the place as **a centre of meaning** where place meanings are individually formed and/or are collectively shared.
A third form is the place as a **perception-action process**. Direct perception-action processes are used to create meanings in a given place.

PLACE AS A LOCUS OF ATTACHEMENT

CAPTIVE BODY IN CONFINEMENT

A HEALTHY LIVING SPACE

02

CON-
FINED
/ THE
SHAPE OF
MY CON-
FINE-
MENT

CONFINED - THE SHAPE OF MY CONFINEMENT

Each experience of isolation is different. Our confinement is defined by tangible layers, or physical layers, where the smallest is the bedroom and the biggest is the universe and non-tangible layers, which represent the virtual. This isolation varies from a self-confinement that is identified by my personal bedroom to a bigger confinement, which is the home, followed by a confinement restricted by governmental processes that limit movement to the neighborhood and Beirut, and a final instance in which confinement is not present.

My room is my initial cell. By escaping my initial cell, I find myself in my home, defined as a bigger cell in a building that encloses seventeen cells. My building is a cell in a neighborhood, in a city, in this country, in this world...

What can be identified as an escape method? Can these escape means be integrated in the design of a new type of residential housing?

CAPTIVE BODY IN CONFINEMENT

SELF ISOLATION

MY BEDROOM

CONFINEMENT THROUGH GOVERNMENTAL PROCESSES

MY NEIGHBORHOOD (WALKING)

NO CONFINEMENT

THE WORLD

COMPLETE CONFINEMENT

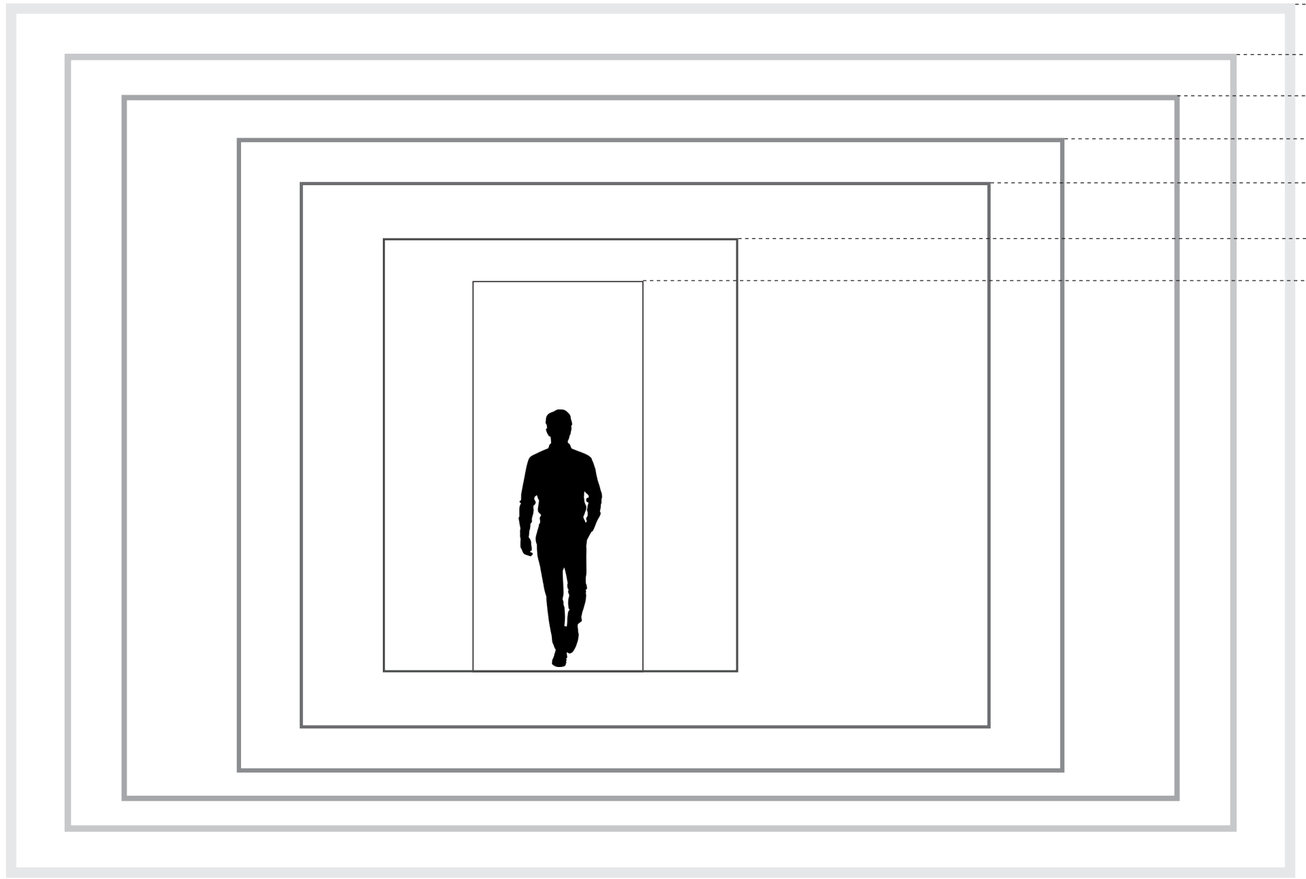
MY HOUSE

VOLUNTARY QUARANTINE

BEIRUT

CONFINED

CAPTIVE BODY IN CONFINEMENT



CONFINED

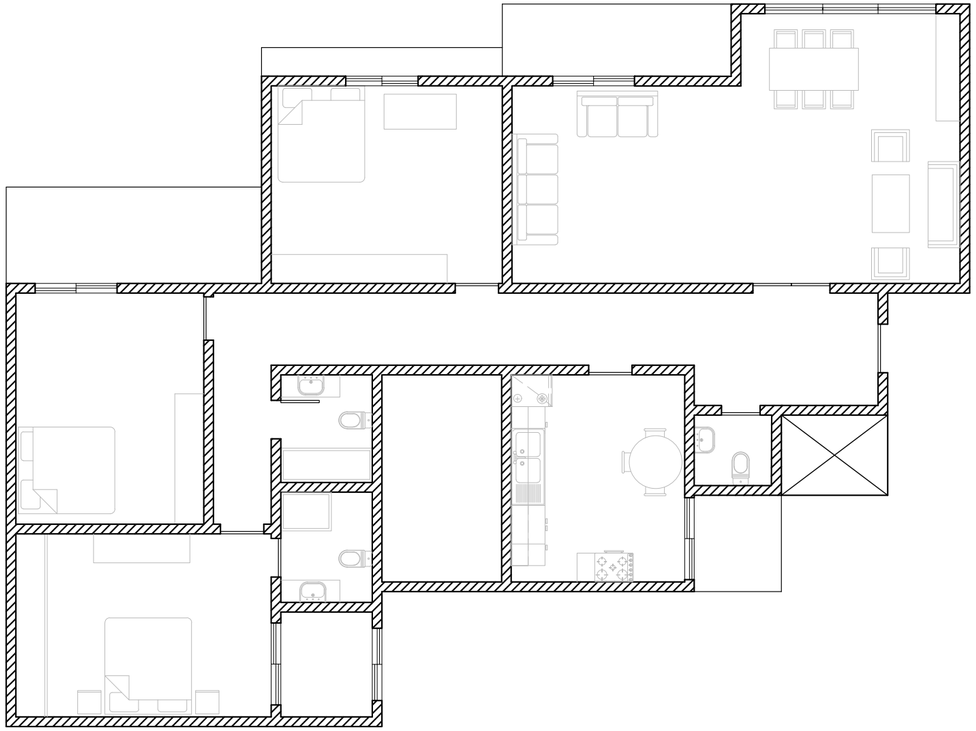
TANGIBLE LAYERS

- MY COUNTRY
- MY CITY
- MY NEIGHBOURHOOD
- MY BUILDING
- MY HOUSE
- MY ROOM
- MY BED

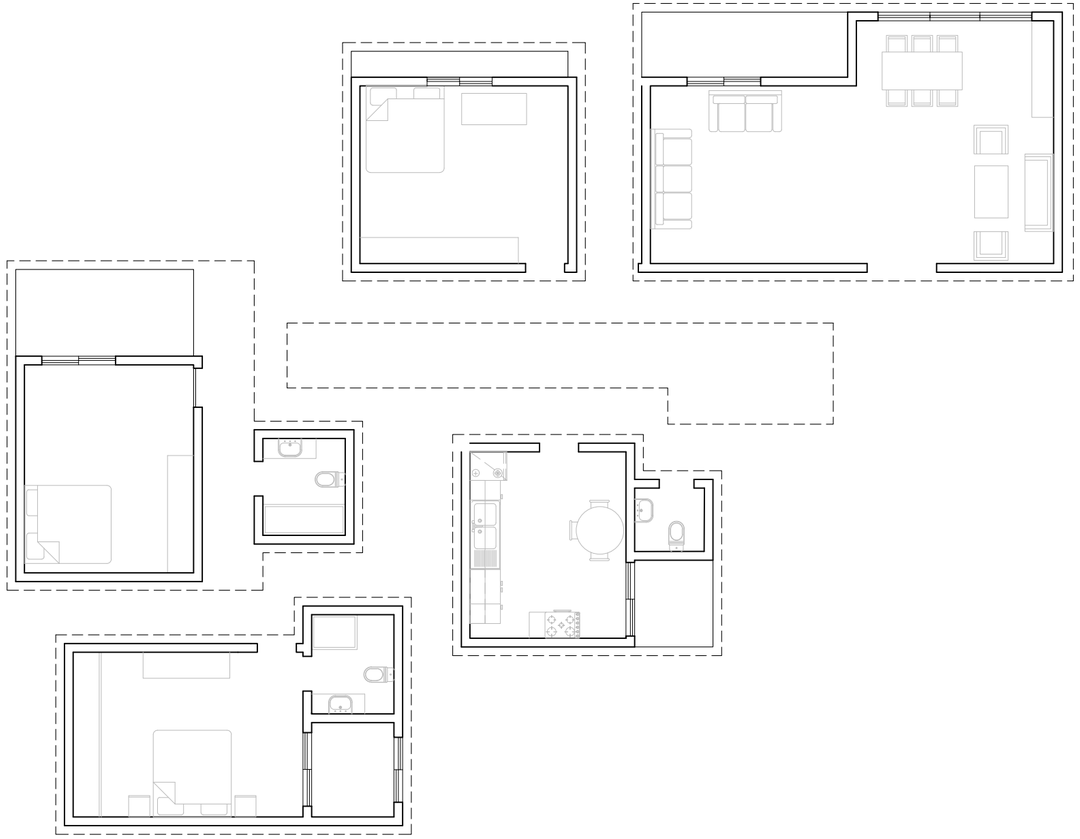
NON- TANGIBLE LAYERS

- THE VIRTUAL

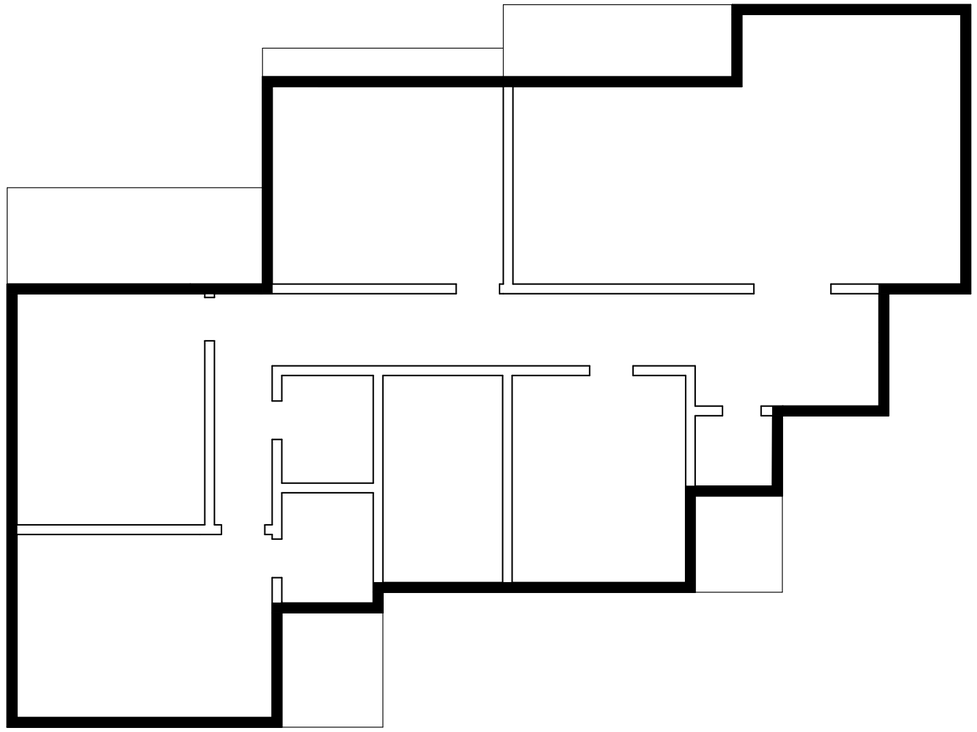
THE NORMAL CONDITION



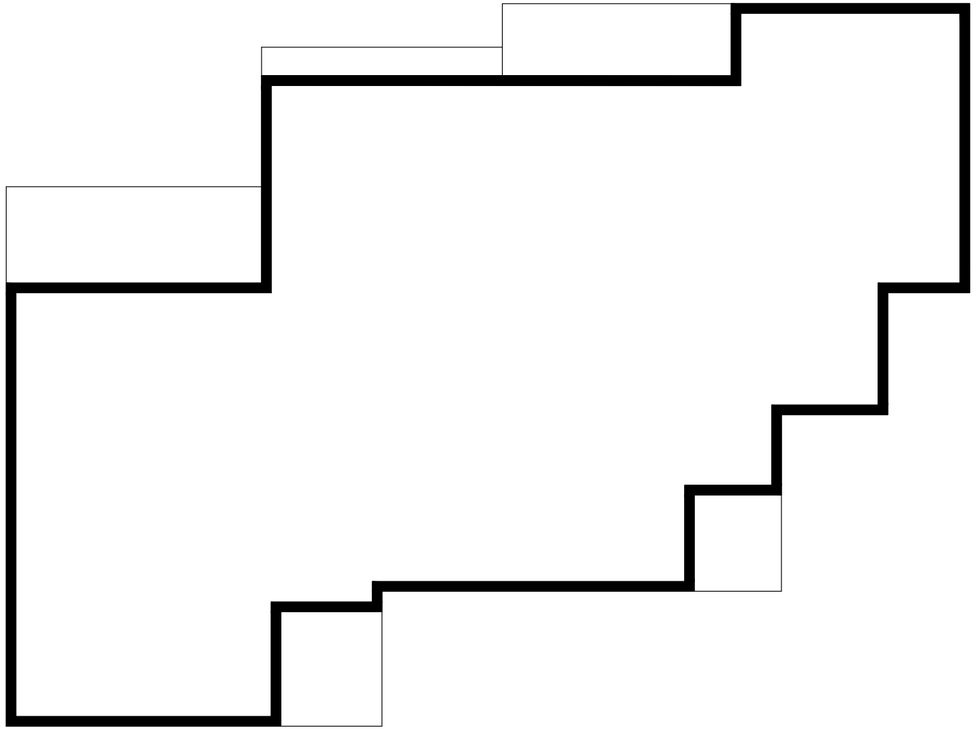
THE UNITS



THE FEELING

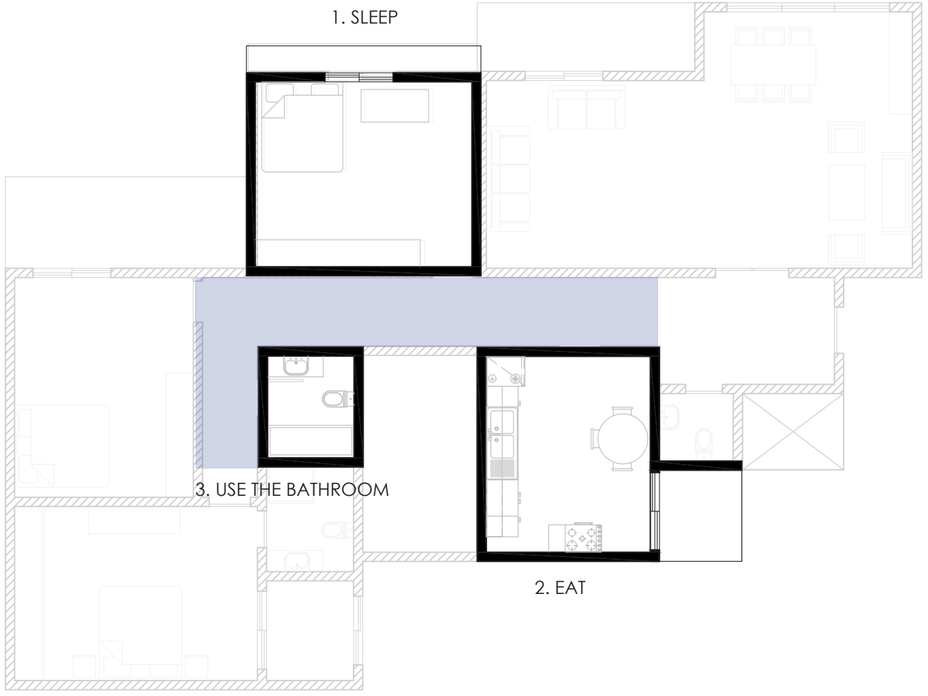


THE CELL



THE CELL(S)

THE BASIC CELL (S)



[CELL]

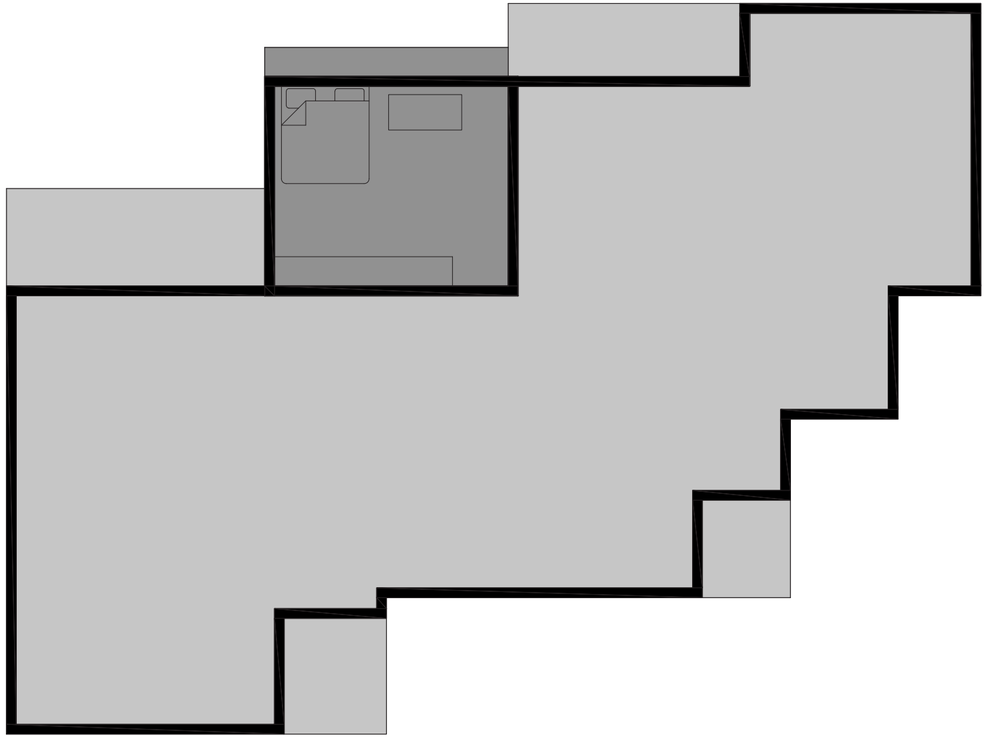
IN A **[CELL]**

IN A **[CELL]**

IN A **[CELL]**

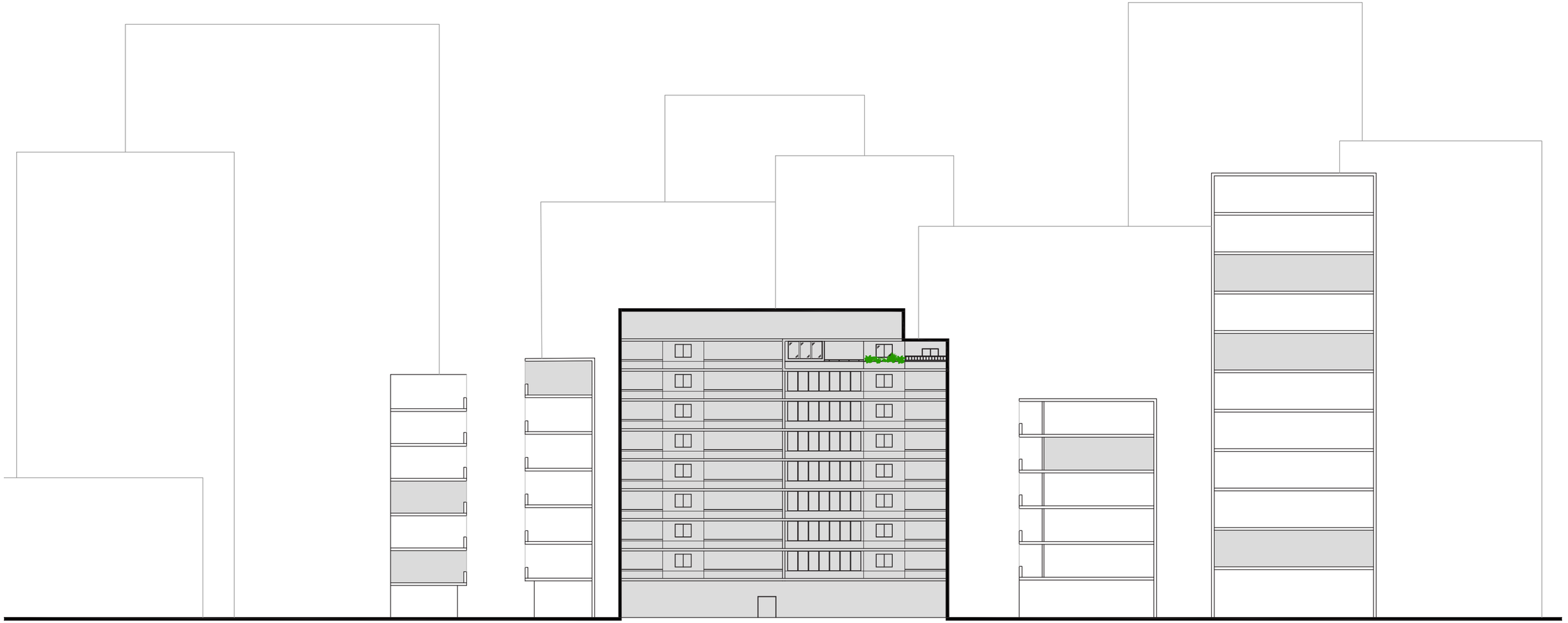
•
•
•

THE BEDROOM: A CELL IN THE HOUSE



THE HOUSE: A CELL ON THE FLOOR

THE FLOOR: A CELL IN THE BUILDING



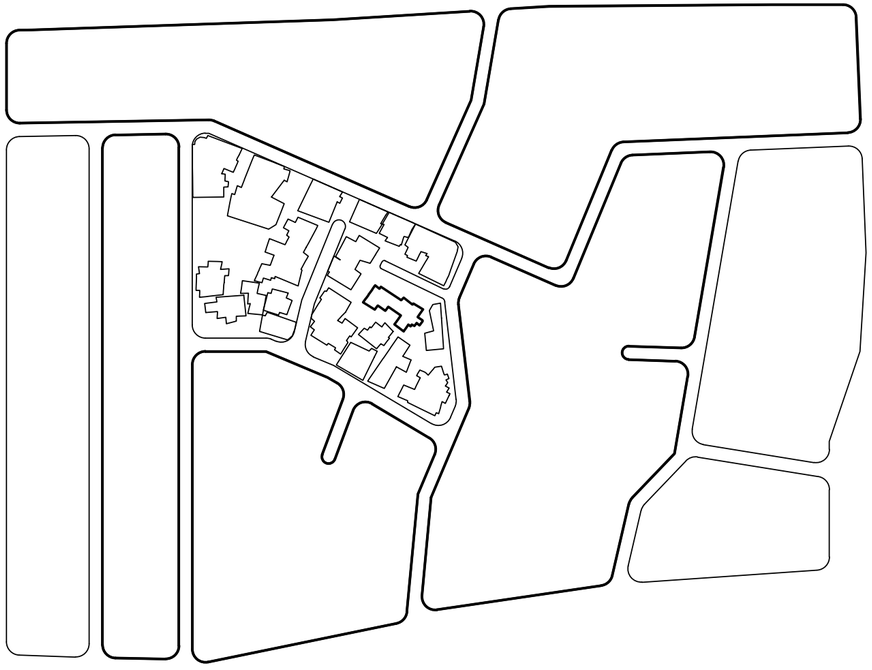
CELL IN A CELL

20 SQM

200 SQM

4 038 SQM

11 540 SQM



102 579 SQM

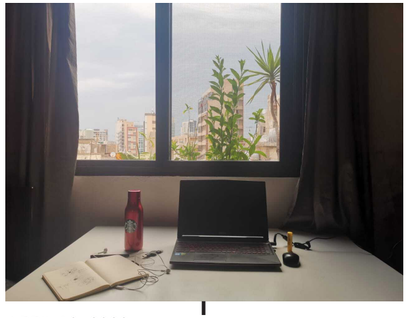
03

ADAPT-ING / ESCAP-ING

ADAPTING - ESCAPING

The pandemic has confined us to homes that were not designed to accomodate for 24/7 living. Thus,to adapt, we are looking for methods that can create an escape of our normality. Windows create a visual escape that connects one to city, balconies create a connection to the outside world, to the neighbours, to the neighborhood, planters create a connection to nature and a stronger approach to biophilia within homes. What else can be identified as an escape method? Can these escape means be integrated in the design of a new type of residential housing?

VISUAL ESCAPE



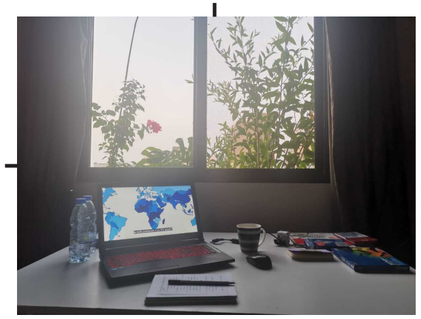
APRIL 10, 2020

MAY 5, 2020

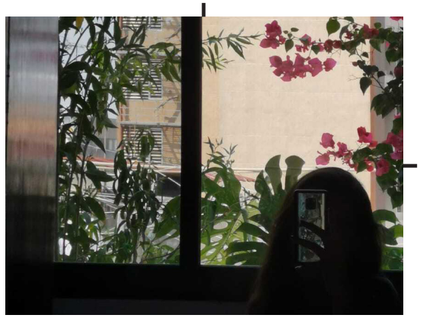
SEPTEMBER 12, 2020

OCTOBER 5, 2020

JULY 15, 2020



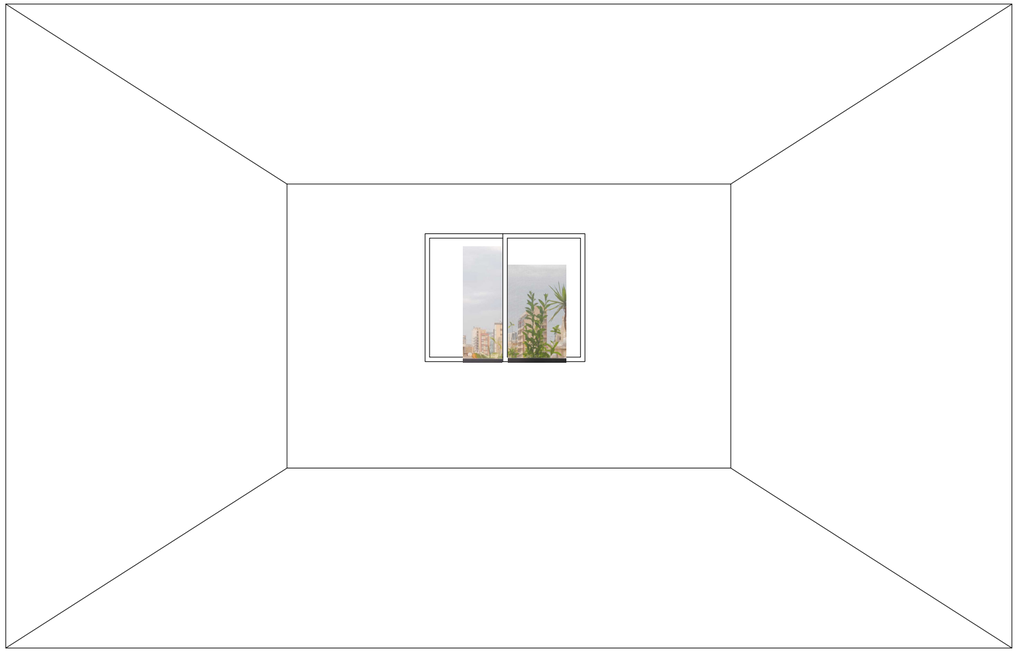
AUGUST 2, 2020



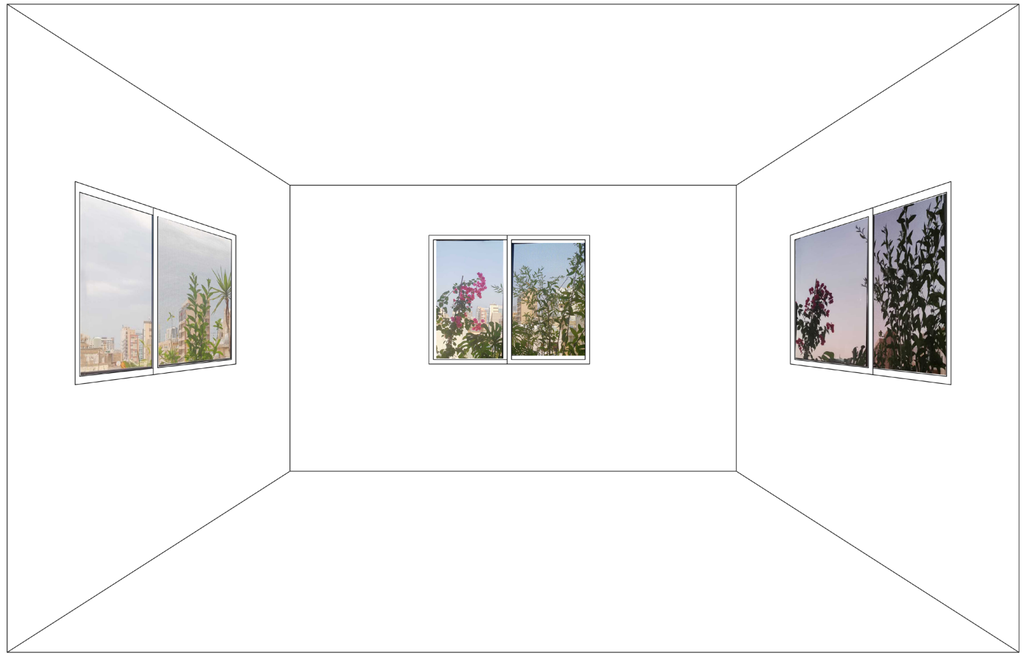
OCTOBER 7, 2020

OCTOBER 12, 2020

CURRENT CONDITION



ESCAPE METHOD



The pandemic has confined us to our homes more than ever. On this map, the red dot represents my house and the places I go to and used to go to. The darker the grey, the more isolated I am from the rest of the city.

Full Lockdown

Partial Lockdown

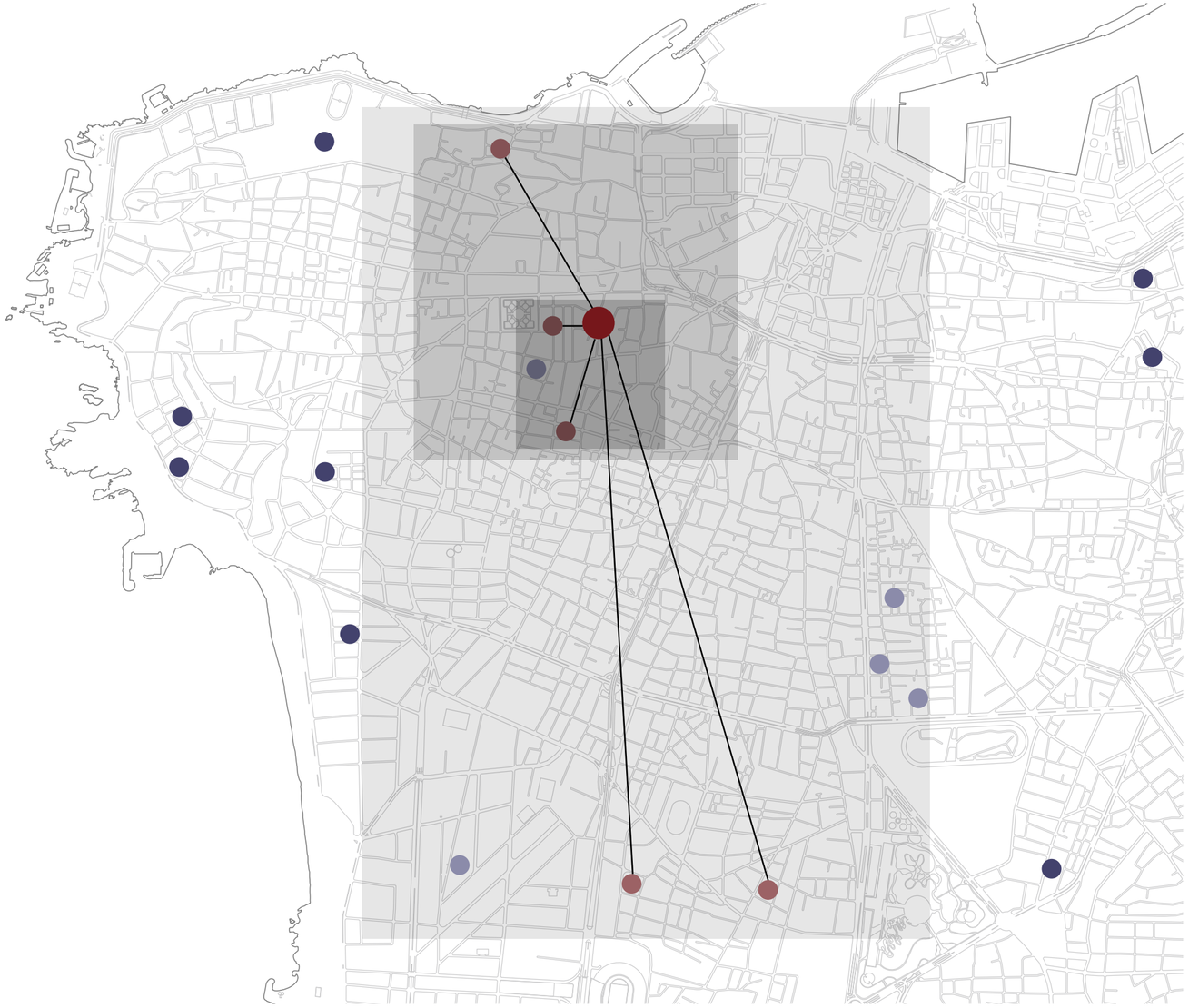
Preventive measures

My house

Frequent visits

No visits since Covid (within the grey area)

No visits since covid (outside of the grey area)



04

DE-
FINING
HABI-
TAT

DEFINING HABITAT

The issue of the habitat and dwelling and their evolution over time sets the question of the future of domestic space, and more specifically, the home. However, what differentiates a domestic space from a shelter from the habitat?
Domestic space in the singular has become a generic term for the private space of the house, the household, or the home as opposed to the public space of the street or the urban space of the city as a whole. While the term "shelter," which is often used to define housing, has a strong connection to the ultimate purpose of housing throughout the world. The mental image of a shelter is of a safe, secure place that provides both privacy and protection from the elements and the temperature extremes of the outside world.

What is domestic space?

Home is where one starts from.

T.S. Eliot, *Four Quartets*

Domestic space in the singular has become a generic term for the private space of the house, the household, or the home as opposed to the public space of the street or the urban space of the city as a whole.

What is shelter?

The term "shelter," which is often used to define housing, has a strong connection to the ultimate purpose of housing throughout the world. The mental image of a shelter is of a safe, secure place that provides both privacy and protection from the elements and the temperature extremes of the outside world.

What is habitat?

A habitat usually denotes the environment in which a reproductive population of organisms can live, occupying a special space between species and individual organic entity.

EVOLUTION OF THE HABITAT

HABITAT 0.0

Carl von Linnés, *Systema Naturae*

1735

The first use of the term "habitat", which laid the foundations for the modern scheme of binomial nomenclature as a structuring principle of the taxonomy of the living world.

HABITAT 1.0

Michel Foucault, *Politiques de l'habitat*

1800–1850

Analysis of the habitat as part of the spatial politics of medicine in the first part of the nineteenth century as a tool of normalization. The organization of space, became explicitly connected to the "problems of population, health, and the town planning... a whole history of spaces – which would be at the same time a history of powers – remains to be written, from the grand strategies of geopolitics to the little tactics of the habitat..." (Elden 2007)

HABITAT 2.0

Public housing

1920

The Housing Act of 1919, known as the Addison Act, pledged substantial government subsidies to build half a million new homes within three years. The passing of the Addison Act was a significant step that made housing a national priority - and made local authorities responsible for delivering decent housing as a social necessity.

HABITAT 3.0

Le Corbusier, Villa Savoye

1929

Villa Savoye's detachment from its physical context lends its design to be contextually integrated into the industrial context of the early 20th century, defining the house as a mechanized entity. Villa Savoye is a manifesto of Corbusier's "five points" of new architecture, which he viewed as a universal system that could be applied to any architectural site.

HABITAT 4.0

Le Corbusier , CIAM 7

1949

Le Corbusier brought up the term "habitat" for the first time claiming he would develop a Charter of Habitat without further explanation what this charter might be. Le Corbusier developed the CIAM Grid to present and compare different modern town planning projects according to the CIAM categories: living, working, transport, and leisure.

HABITAT 5.0

Le Corbusier, Unite d'habitation

1952

Unite d' Habitation focused on communal living in a "vertical garden city."
It is essentially a "city within a city" that is spatially, as well as, functionally optimized for the residents.
The design requires an innovative approach toward spatial organization to accommodate the living spaces, as well as the public, communal spaces. The majority of the communal aspects do not occur within the building; rather they are placed on the roof.

HABITAT 6.0

Moshe Safdie, Habitat 67

1967

The development was designed to integrate the benefits of suburban homes—namely gardens, fresh air, privacy, and multilevelled environments—with the economics and density of a modern urban apartment building. It was believed to illustrate the new lifestyle people would live in increasingly crowded cities around the world.Safdie's goal for the project to be affordable housing largely failed because of the high demand for the building's units.

HABITAT 7.0

Xanadu Houses

1980

The Xanadu Houses were a series of experimental homes built to showcase examples of computers and automation in the home in the United States. The house used an automated system controlled by Commodore microcomputers in which out of the fifteen rooms the home had, the kitchen, party room, health spa, and bedrooms all used computers and other electronic equipment heavily in their design.

HABITAT 8.0

Social housing

2006

Social Housing is a principal element for a more democratic city. These housing structures provide decent dwellings for all citizens in urban areas and connect them to the rest of the city and its services. Unfortunately, in many countries, the term "Social Housing" still has a negative connotation. It is often seen as a project that seeks to build the largest number of units with cheap materials, and little-to-no concernfor the quality of life of its residents.

HABITAT 9.0

Schemata Architects, Capsule Hotel

2017

Capsule hotels become a cultural phenomenon in Japan after the first one opened in Osaka in the late 1970s.Traditionally, capsules were designed to offer a cheaper option to those that couldn't afford traditional hotels. But they became increasingly popular, prompting a number of more high-end versions to open.

HABITAT 10.0

Unknown by Sirena

2021

?

PRE-WAR

Buying houses reserved for the very wealthy and taking out loans for mortgages from banks was uncommon.

Slums caused public health concerns, especially from the middle class who were worried about the spread of disease.

1890

Housing for the working class known as the first council houses.

WWI

Housing shortage because of an inflation of prices and lack of building materials.

1919

'Homes fit for Heroes' Act, also known as the Addison Act to provide homes for soldiers returning from war.

213,000 homes were completed under the Act's provisions (instead of 500,000 because of economic circumstances).

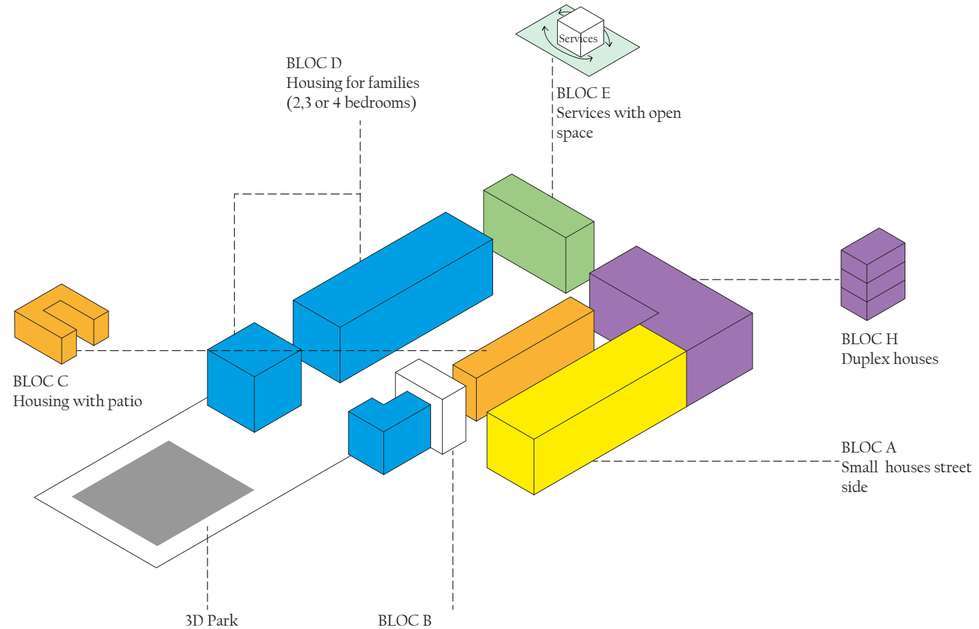
WWII

Houses were bombed in the war, and left a shortage of 750,000 homes.

Winston Churchill, made housing central to his government. He ordered for the build of temporary homes; known as pre-fabricated homes

Tamir Davies, A History Of Social Housing In The UK (2016)

PUBLIC HOUSING



Sustainable housing / Low energy

The Savonnerie Heymans complex reflects a truly sustainable approach by recreating a real new neighbourhood.

42 social housing unit

Apartments
Lofts
Duplexes
Maisonettes

Communal facilities

A game library
A mini-forest garden and playground 3D-landscaped park
The main promenade

Savonnerie Heymans / MDW Architecture

H 3.0VILLA SAVOYE / 1929

1920 — Le Corbusier is developing his theories on modern architecture

Rethinking the nature of modern life and architecture's role in the new machine age.

1923 — Argued that modern machines could create highly precise objects not unlike the ideal platonic forms valued by the ancient Greeks.

Le Corbusier sought to isolate type forms, which were universal elements of design that can work together in a system.

1926 — Five Points of Architecture; a universal system that could be applied to any architectural site.

- Pilotis
- Free Facade
- Open Floor Plan
- Horizontal Windows
- Roof Garden

1929 — The Villa Savoye represents Le Corbusier's re-conception of the very nature of architecture, his attempt to express a timeless classicism through the language of architectural modernism.

Kevin D. Murphy. "The Villa Savoye and the Modernist Historic Monument." (2002)

VILLA SAVOYE

STRUCTURE

Structure hovering mid air with uncumbered views

Raised 3.6 meters before introducing it to light and air.

The use of pilotis allows the design having no bearing walls, creating and independent structural system.

Open space with a free plan that brings the landscape under the outline of the building.

GEOMETRY

Functional roof = Playground

The ideal living space is expressed by zoning: seperation between rooms that function during the day or the night

Elevated rectangular structure giving the building a feel of lightness.

Interpenetration of indoor/ outdoor space

CIRCULATION

The ramp is the main movement between spaces contributing as a device to control the natural lighting in the building.

The staircase seperates the floors while the ramp links them together.

Pilotis free up a circulation zone underneath the building.

WWII

The need for housing was at an unprecented high

1947

Le Corbusier is comissioned to design a multi-family residential housing for the people of Marseille who were dislocated after the bombings on France.

1952

Completion of Unite d'habitation in Marseilles that focused on communal living

- Vertical garden city
- Shops
- Medical facility
- Hotel
- Interactive Roof

The spatial organization is a "Double House"

Innovative response to a residential building and influence on the Brutalist style with the use of beton-brut concrete

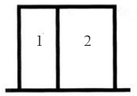
1952

MVRDV "Double House" in Utrecht

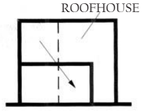
UNITE D'HABITATION

2 storeys, 14metres deep

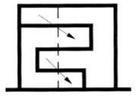
4 storeys, 7metres deep
No wide views to park



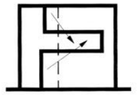
House in a house
No roof access house 1
Small garden access house 2



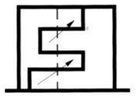
Alternating floors 1
No roof access house 1



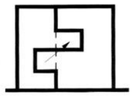
Alternating floors 2
Too little garden access for house 1



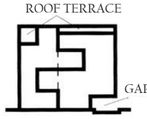
Alternating floors 3
Too little garden access for house 1



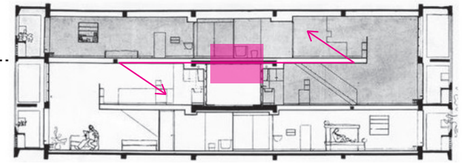
Alternating floors 4
Garden access & Roof access



Outdoor space
Roof terrace house 1
Garage + roof terrace house 2



Final result
Bedrooms in 1 + 2



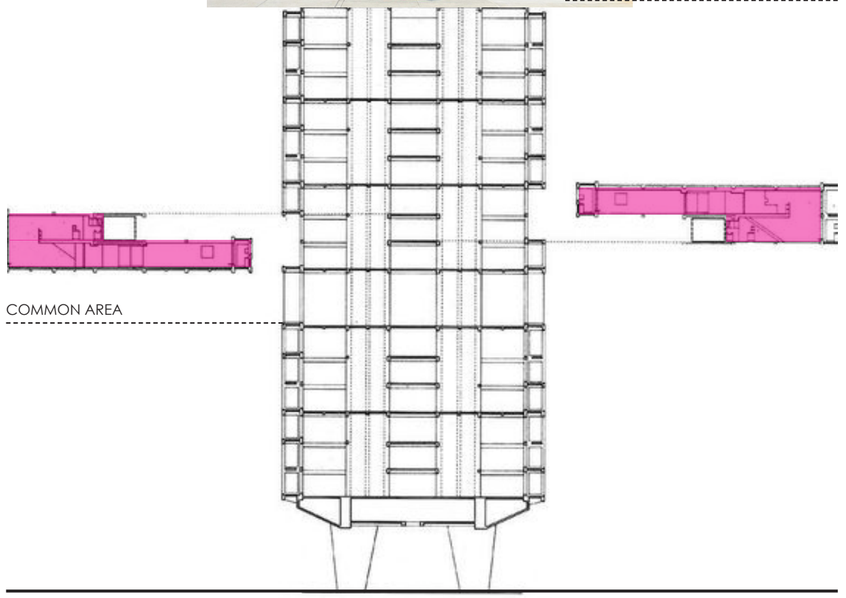
COLLECTIVE INFRASTRUCTURE

Gymnasium

Kindergarten

Shallow pool

Garden



1960 — The japanese metabolism manifesto's proponents believe that buildings should be designed as living, organic, interconnected webs of prefabricated cells.

1961 — Safdie's thesis at McGill University titled "A Case for City Living" and described as "A Three-Dimensional Modular Building System

1967 — World Exposition

Moshe Safdie Habitat 67

Combination of two housing typologies: the urban garden residence & the modular high-rise apartment building.

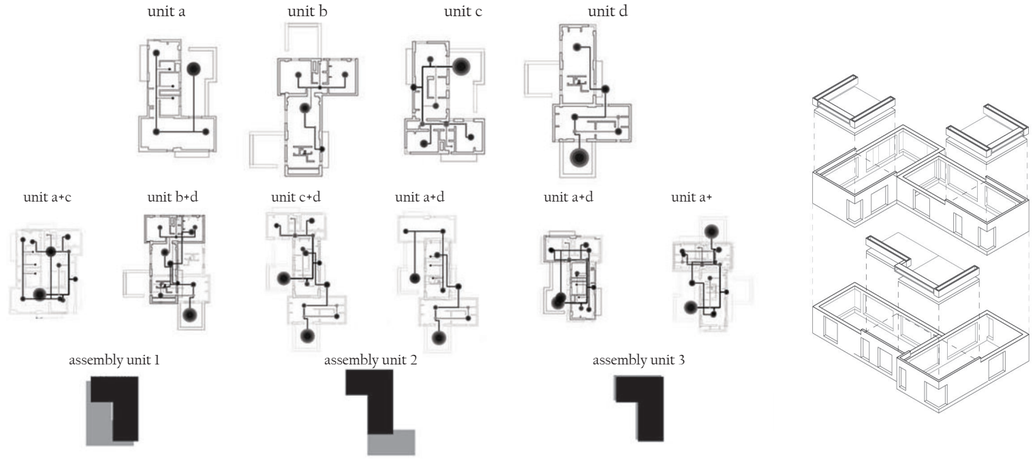
An attempt at a high-rise village – upsizing from a micro to a mega scale.

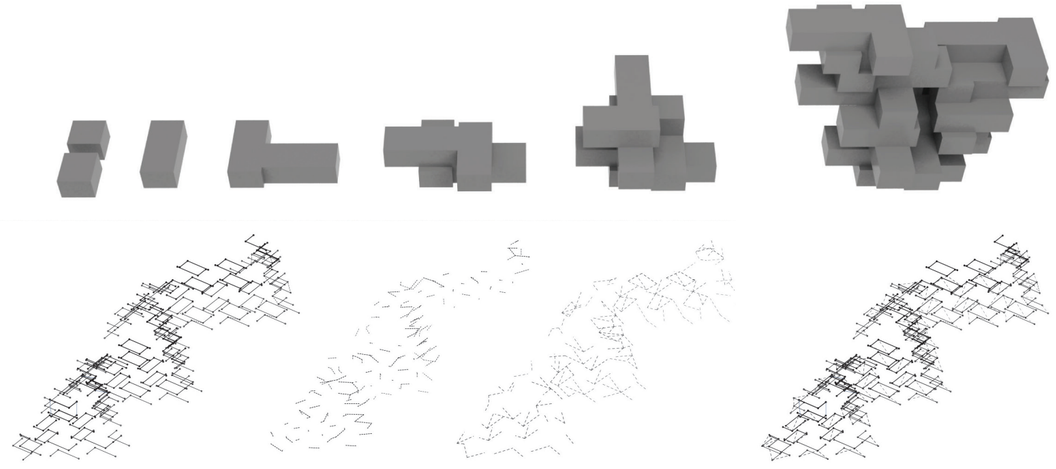
15 housing type between 60 and 160 sqm

Effective and site adaptable new housing typology

1970 — A global economic downturn, an oil crisis, Nixon de-links the dollar from the gold standard, and the Vietnam war.

1972 — Nakagin Capsule Tower





Stacking of "L" Unit

Structural Connections

Dual Connections (Exterior Usage)

Stacking + Structural + Dual

TYPOLOGY & CIRCULATION

ASSEMBLY

ABSTRACTION OF UNIT GEOMETRIES AND RELATIONSHIPS

1960 — World Design Conference

This take on apartments and high-rises in Tokyo is a prime example of the Metabolism architecture movement, known for it's focus on adaptable, growing and interchangeable building designs.

1972 — Kisho Kurokawa/ Nakagin Capsule Tower

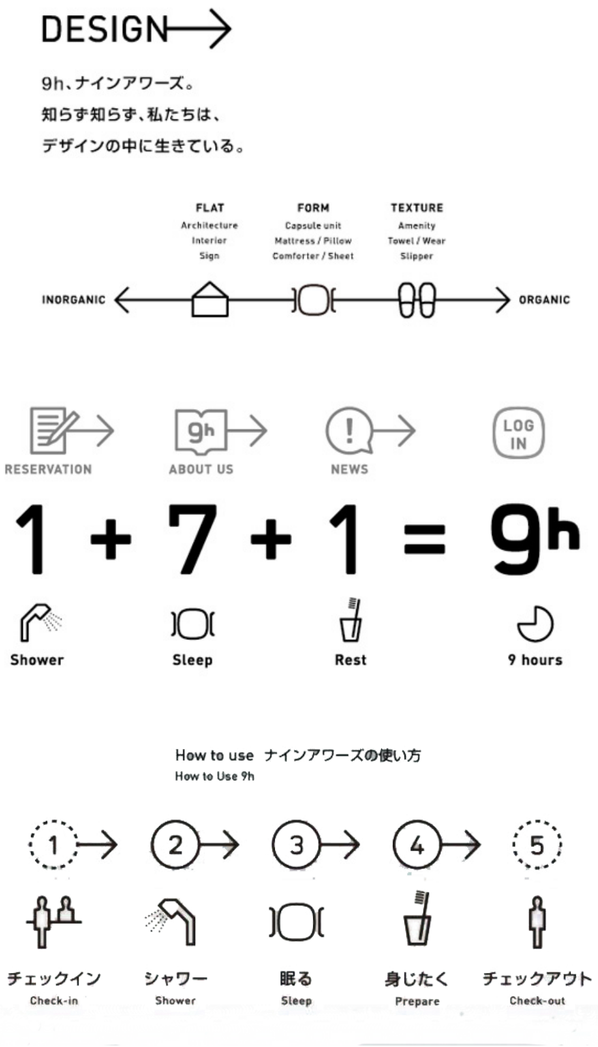
- First capsule architecture design
- Housing traveling businessmen that work in central Tokyo
- Prototype for architecture of sustainability and recyclability, as each module can be plugged in to the central core and replaced when necessary.

2017 — Schemata Architects / Capsule Hotel

- Capsule Hotel with an integrated sauna
- Male guests only, considering the customer base in the district.

2019 — Naruse Inokuma Architects /Nine Hours Capsule Hotel

- Cheap
- Comfort
- Functional



05

A GLOB-AL TY-POLOGY

A GLOBAL TYPOLOGY

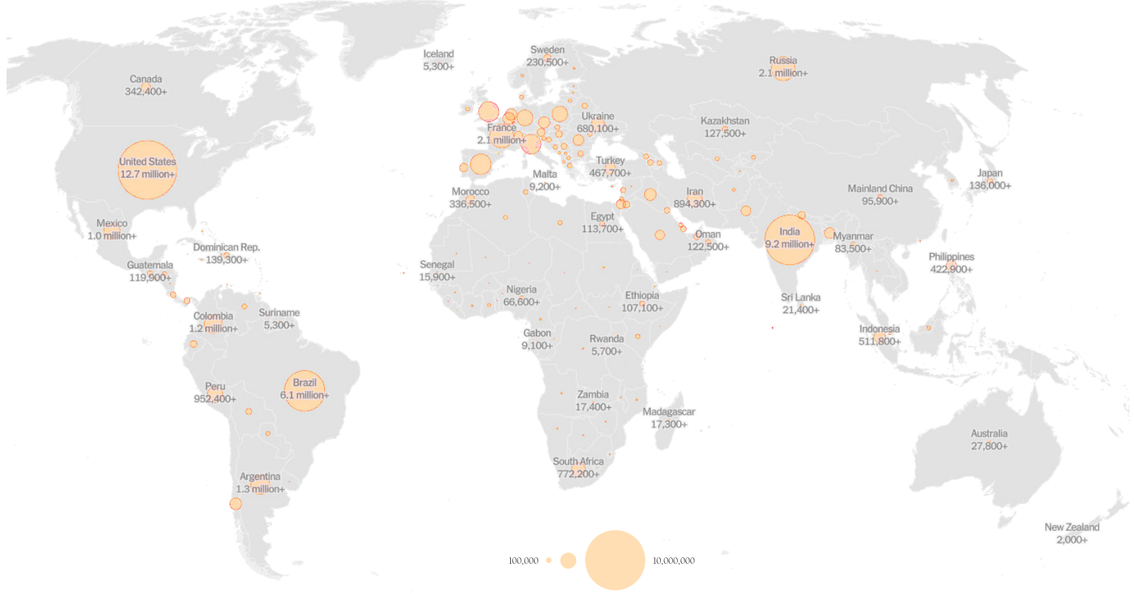
Much of habitat architecture can be understood as a consequence of its respective period. Le Corbusier lifted his houses off the humid ground to avoid contamination. Adolf Loos's ultra-boxy Villa Müller in Prague, from 1930, included a separate space in which to quarantine sick children. Architects collaborated with progressive doctors to build other sanatoriums across Europe. As extreme as the aesthetic of modernist architecture seemed in the early twentieth century, people could at least be reassured that it was safe

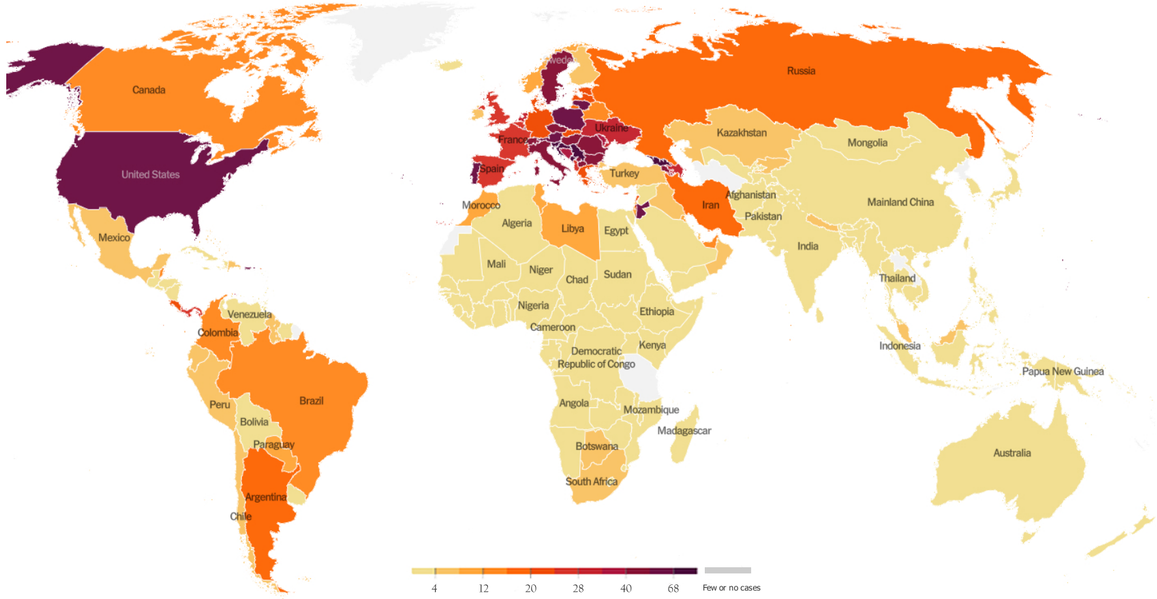
In recent months, we have arrived at a new juncture of disease and architecture, where fear of contamination again controls what kinds of spaces we want to be in. As tuberculosis shaped modernism, so will COVID-19 and our collective experience of staying inside for months on end will influence architecture's near future.

The long-term impact of the global crisis will be a demand for residences that are versatile, functional, modular and adaptable to sudden lifestyle changes. Habitat 10.0 is a proposal for housing post pandemic.

Habitat 10.0 is a global typology that finds itself in the needs to design for an extreme condition. Whether it is in Beirut, Paris or New York, the common factor is the need to rethink domesticity and the spatial experience. Whether one is worried about the next pandemic, or has simply learned to love this new lifestyle, it is essential to highlight the importance of shelter and place around which our lives revolve.

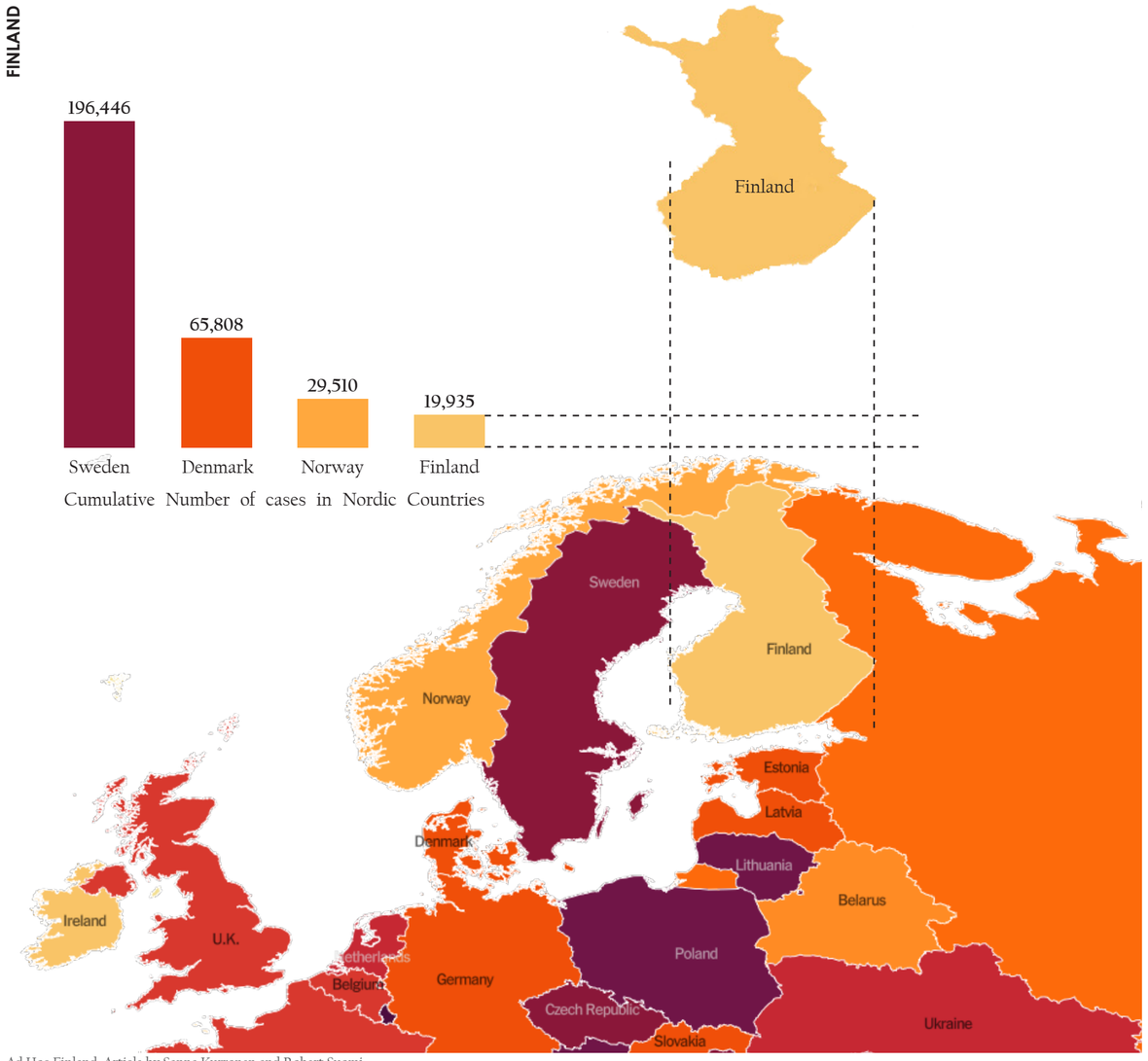
TOTAL CASES WORLDWIDE





Source: Local governments; The Center for Systems Science and Engineering at Johns Hopkins University; National Health Commission of the People's Republic of China; World Health Organization.

FINLAND



Ad Hoc Finland, Article by Sanna Kurronen and Robert Suomi

FINLAND'S RESPONSE TO COVID19

EMERGENCY STOCKPILING

Protective equipment like surgical masks, medical supplies, oil, grains, agricultural tools and raw materials.

WWII — 2020

- Two months lockdown
- "Corona Flash" app
- Stable economy
- Technological advantages
- Culture of isolation

Schools and universities will be closed. This does not apply to nurseries and day care centres, however. Also, schools will be open for 1-3 graders, if their guardians work in essential sectors (e.g. health care, police). — Remote Working

Some public services, including, but not limited to, museums, libraries, sports centres and theatres, will be closed. Non-public sector service providers and organisations are encouraged to follow suit. — Virtual exhibitions

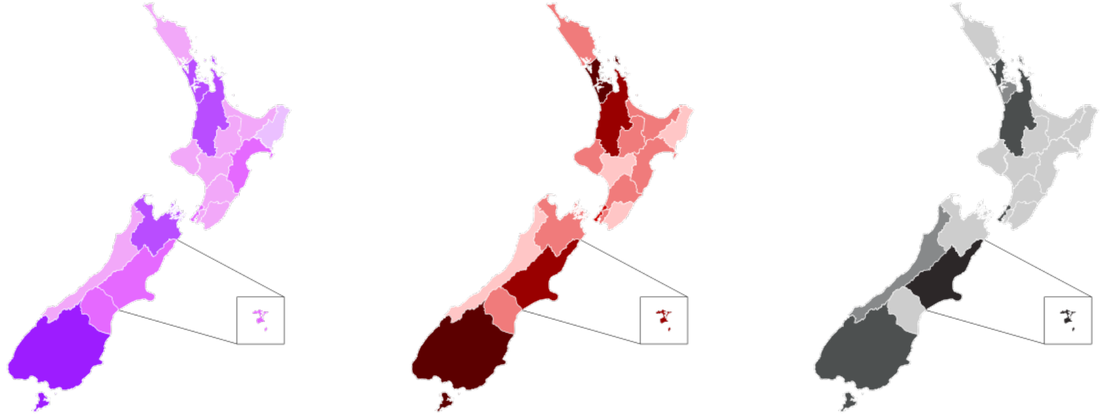
Social gatherings of 10 or more people are not permitted. The government also advises avoiding all "unnecessary" meetings in public. — Outdoor spaces

Visiting elderly homes as well as care homes deemed to be under greater risk due to the coronavirus is now forbidden. — Shared spaces

Finland's border will be closed for the most part. Finnish residents should not travel abroad. Residents currently abroad are advised to return back to Finland. Those returning are expected to undertake a two-week quarantine. — Close distanced shops

The government is launching a 5bln EUR stimulus package. The aims of the package are to provide credit to businesses and ensure liquidity in the financial sector.

NEW ZEALAND



Map of cases per 100,000 inhabitants in New Zealand by district health board

0 10 20 30 60
cases

Map of cases in New Zealand by district health board

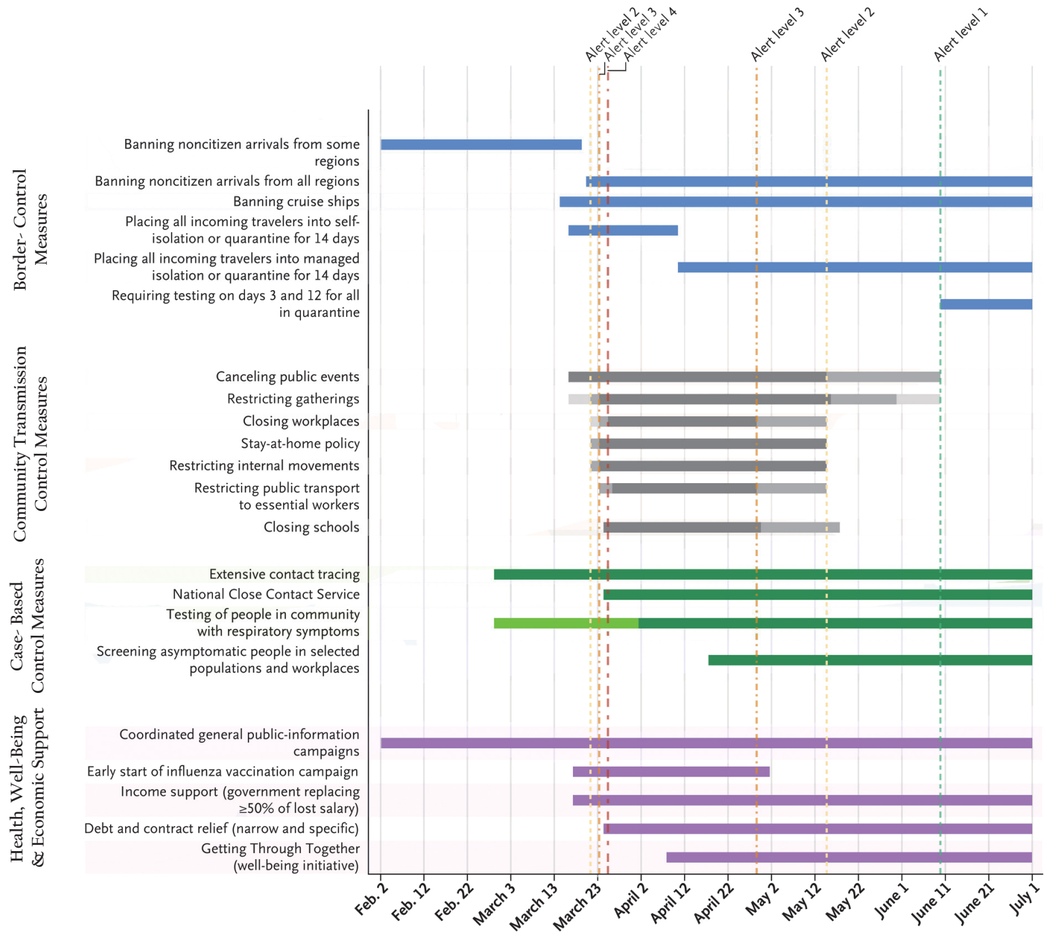
0 10 50 100 200

Map of deaths in New Zealand by district health board

0 1 2 10

Source: New Zealand Government

NEW ZEALAND'S RESPONSE TO COVID19

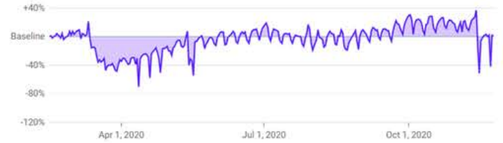


MOBILITY CHANGES OVER TIME IN LEBANON

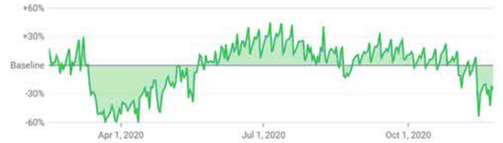
Even prior to the COVID19 crisis, a crucial topic of debate among town planners was how to plan a sustainable, healthy urban environment that is dependent on walking and cycling.
Paris mayor Anne Hidalgo, who has been leading a radical overhaul of the city's mobility culture since taking office in 2014, embraced the notion of reshaping France's capital into a 15-minute city. Sorbonne Professor Carlos Moreno developed the concept to advocate the creation of a city of neighborhoods, in which inhabitants find everything they need in terms of work, retail and leisure within 15 minutes of their home. Ideally, Habitat 10.0 would take a center place in a 15 min neighborhood. It is not about creating a village that contains everything, but more specifically finding a better reorganization of space whether on the urban scale or the domestic space.

Source: Google COVID-19 Community Mobility Reports

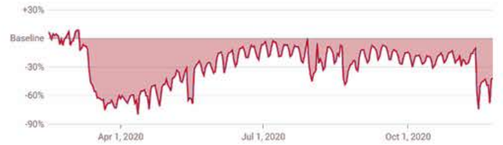
RESIDENTIAL AND WORKPLACE MOBILITY



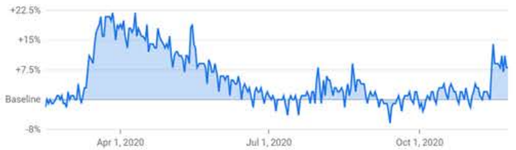
GROCERY AND PHARMACY



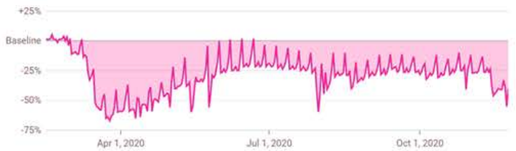
PARKS



RETAIL AND RECREATION



RESIDENTIAL

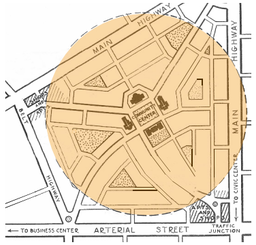


WORKPLACES

1570

Milan was forced to adapt after plague struck in the 1570s. Today, mayor Giuseppe Sala is introducing plans to 'rethink the rhythms' of the city.

Early 1900s



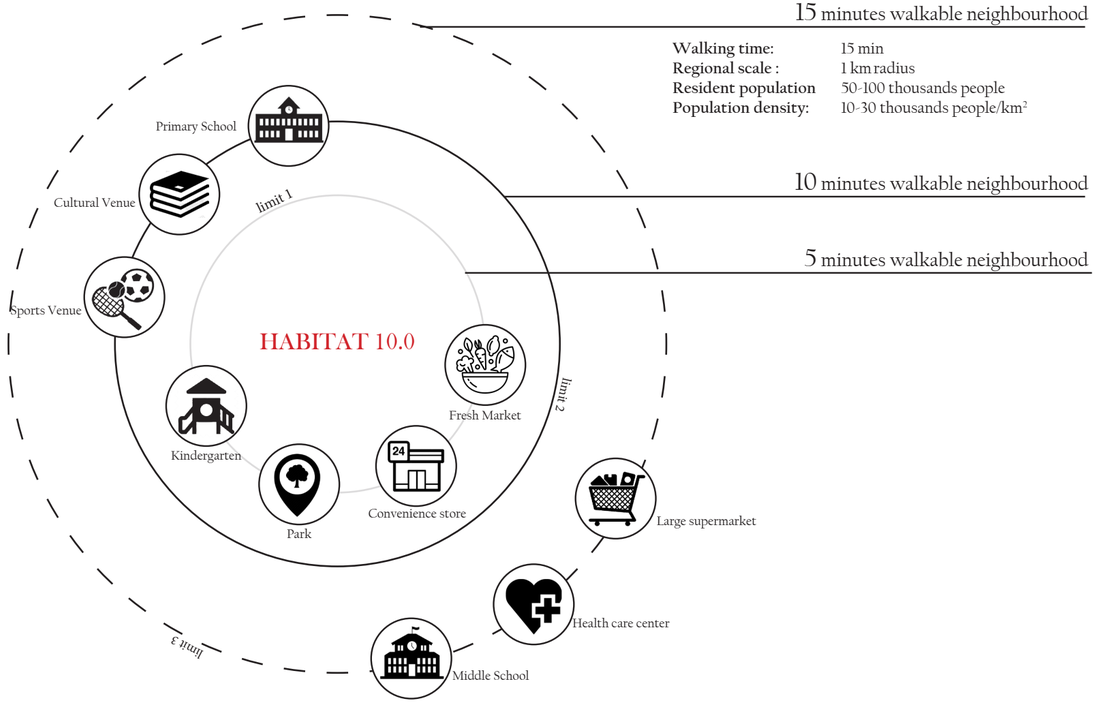
The "neighbourhood unit" advanced by the American planner Clarence Perry.

2018

La ville du quart d'heure found new popularity from Carlos Moreno, who developed the idea in pursuit of amour des lieux, or attachment to place.

2020

Paris Mayor Anne Hidalgo quickly became one of the most prominent champions of the 15-minute city. Her goal is to pedestrianise, promote cycling, restrict cars and bring parks...

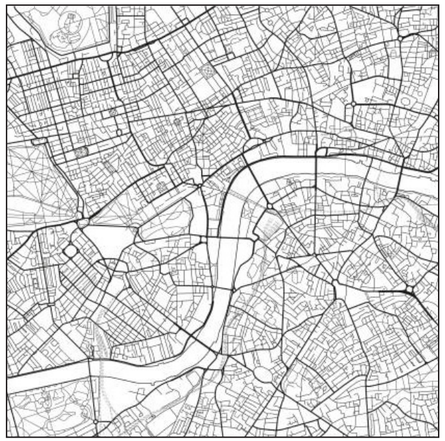


PARIS

BEIRUT

MADRID

DOHA



LONDON

AMMAN

NEW YORK

DUBAI

06

HABI-
TAT
10.0

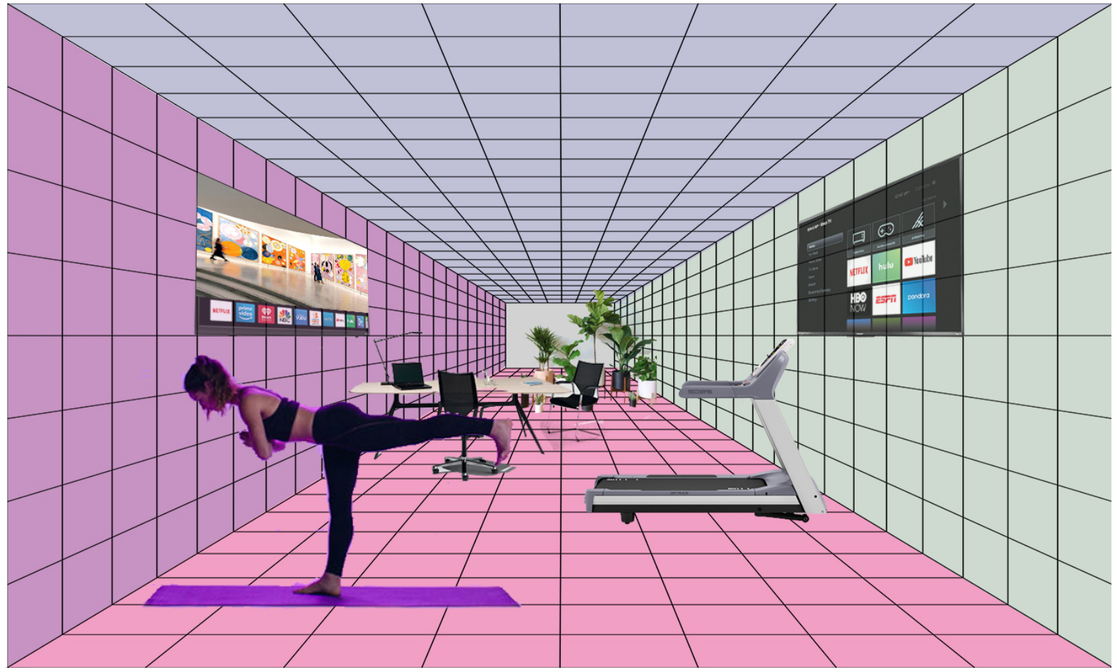
HABITAT 10.0

The long-term impact of the global crisis will be a demand for residences that are versatile, functional, modular and adaptable to sudden lifestyle changes. Habitat 10.0 is a proposal for housing post pandemic.

The habitat has expanded beyond inhabitation into a space of entertainment and work environment. The services needed are not limited to three basic ones anymore. In order to live, survive and thrive in my many cells, I need complimentary services. Connections to the world, to my family and to my loved ones are necessities that help me survive. Isolation expands from a personal condition to one that integrates elements and components of survival. While as a society we did not plan this, and are trying our best to adapt to it, now is the time to rethink housing design and place making. What impacts will our 'new normal' have? Could our current pandemic be the driver for new housing in a post-Covid-19 world? What is achievable, regardless of wealth, size of home, whether the space is rented, owned, if we are alone or with others? Will Habitat 10.0 replace high-rise buildings? Near the beach or in the mountains? Are we moving from the urban setting to the rural area?

BASIC NEEDS PRE COVID19

COMPLEMENTARY NEEDS DURING COVID19



EXAMPLE OF AN APARTMENT IN BEIRUT

3Beirut by Foster+Partners

PROGRAM PROPORTIONS

Legend

Living spaces	Kitchen	Dressing
Bedroom	Circulation	Services
Balcony	Bathroom	Shared floor space

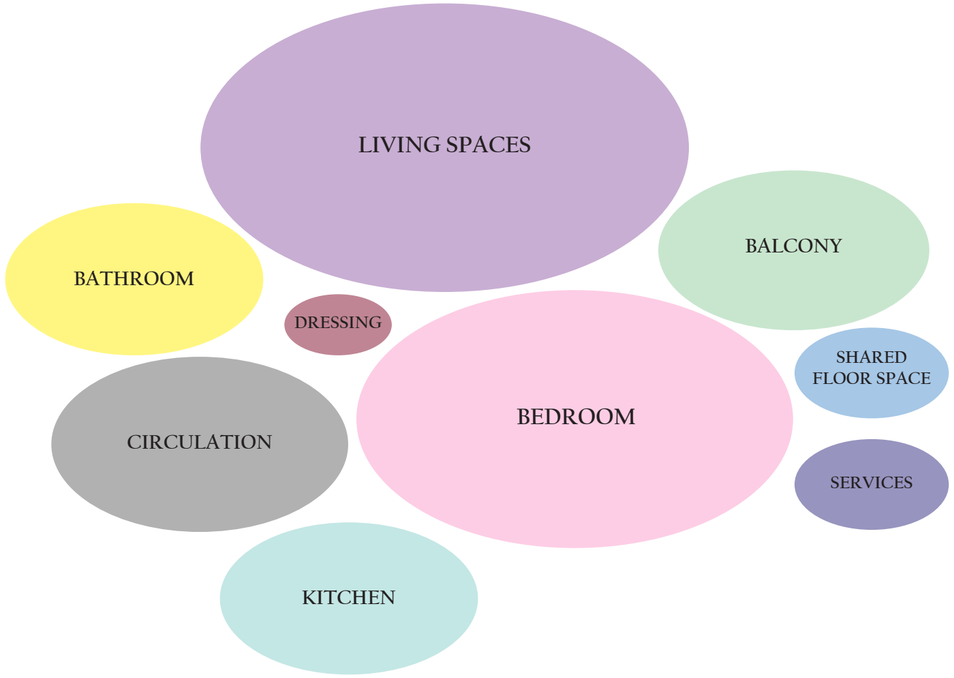
Proportions

26 %	9 %	2 %
20 %	12 %	6 %
10 %	9 %	6 %

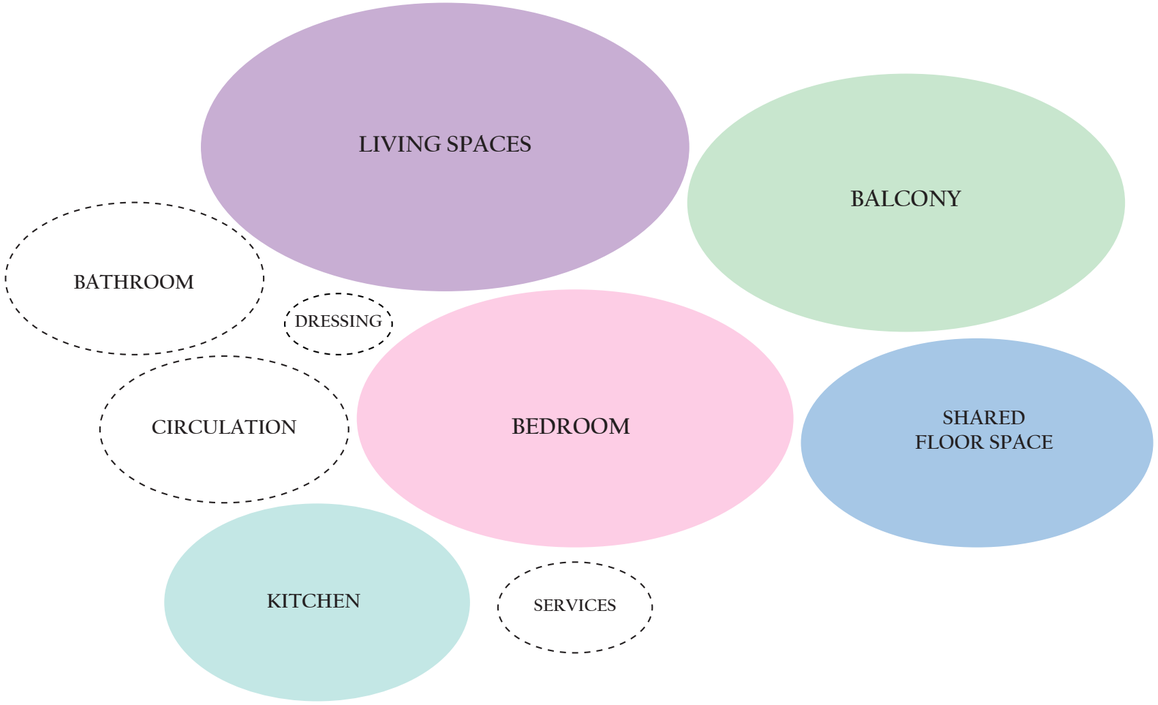
Specs

Location:	Beirut, Lebanon
Area:	450 m2
Shared spaces:	2
In/Out ratio:	9 %

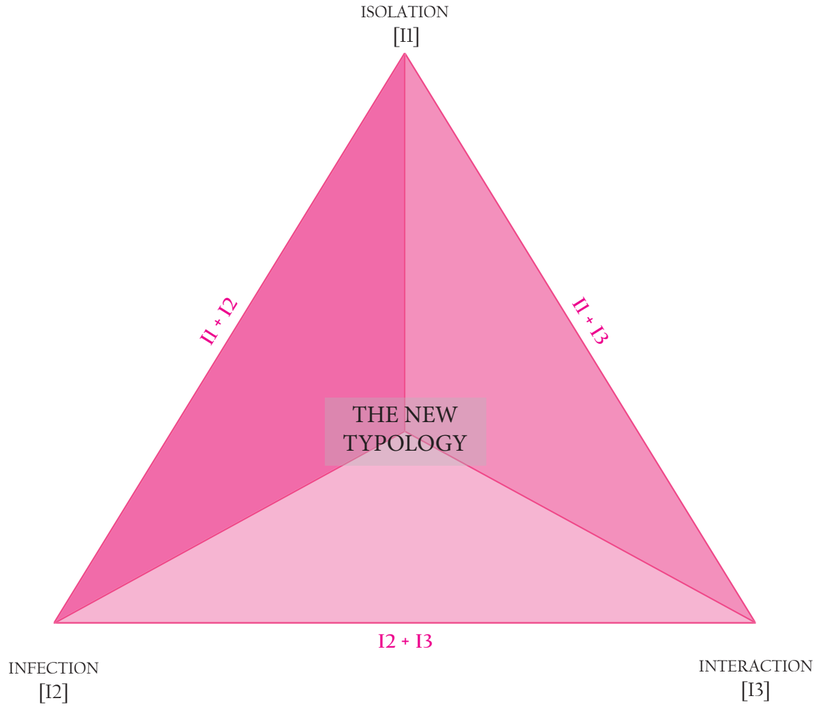
THE PROGRAM



RETHINKING THE PROGRAM



As we move forward in the different phases of the pandemic, the focus is reshuffled on our intimate spaces. Habitat 10.0 centres the attention on new configurations and new plans. The quality and comfort of our homes alongside the major factor of infection constitute the principal elements of a new design. Looking at a typical 300sqm apartment in Beirut, it is apparent that outdoor spaces and shared spaces are only secondary in comparison to living spaces and bedrooms. But confined in our houses, we are rethinking our requirements and needs : from green areas and gardens, exploitable rooftops, natural light, and ventilation, balconies, and terraces, transitional and filtered entrances, etc. The basic typology that focuses on eating, sleeping and using the bathroom is still essential but an added layer that focuses on Isolation, Infection and Interaction creates a new typology of domestic space.



07

CRITE-
RIAS

CRITERIAS

One Year into the COVID-19 pandemic, it is evident that the long-term impact of the global crisis will be a demand for residences that are functional, modular and adaptable to sudden lifestyle changes.
Habitat 10.0 is a proposal for housing post pandemic that rethinkis our requirements and needs. The focus is on five main programmatic aspects: social modules, living modules, independent modules, working modules and wellness modules.

The Social Modules cater for the individual interests of the residents and create a semi public connection with the rest of the neighbourhood.

The living modules allow the creation of different configurations through the addition of different entities. The independent modules vary between interior and exterior ones. They can act as additional bedrooms, offices, living space, gathering space…

The learning and working of the future vary between individual office pods, co-working spaces, outdoor working spaces or family offices.

A wellness floor which can be understood in two ways: in the health care aspect of covid and coming pandemics or for a self inflicted isolation for people who believe in it.

SURROUNDING CRITERIAS

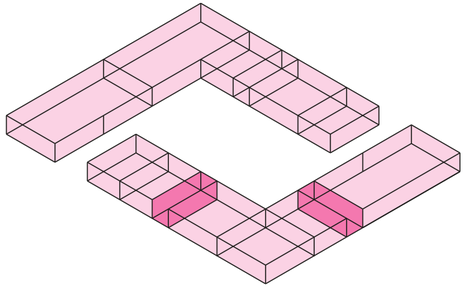
1. SUPERMARKET /
CONVENIENCE STORE

2. SCHOOL

3. HEALTH CARE CENTER /
PHARMACY

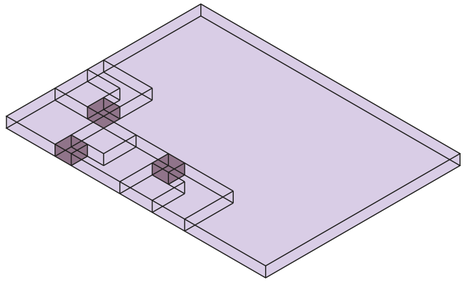
4. VIEWS

5. CULTURAL/
SPORTS VENUE



1. SOCIAL MODULES

- Connection to neighborhood
- Interior and Exterior playgrounds
- Sports area
- Transformative space ex: Sports area- Yoga Room

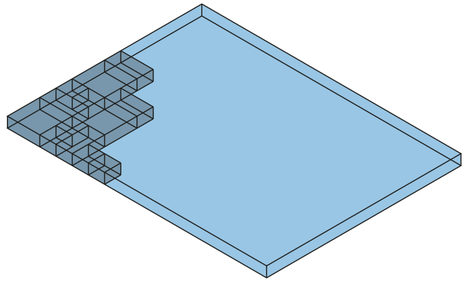


2. LIVING MODULES

- Basic sleep-eat-live
- Flexible interiors
- 40sqm-60sqm-80sqm-100sqm

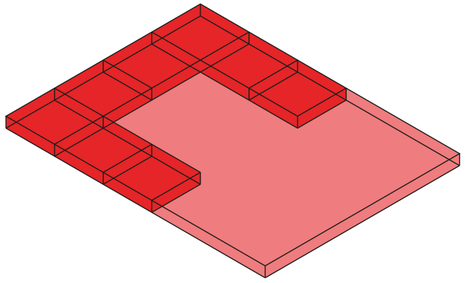
2.1 INDEPENDENT MODULES

- Attached to Housing Module
- Bedrooms
- Additional gathering space



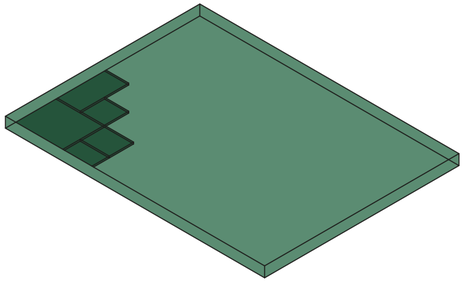
3. OFFICE PODS

- Single pods
- Multi people office
- Interactive offices
- Virtual offices



4. WELLNESS MODULES

- Quarantine pods
- Self-isolation

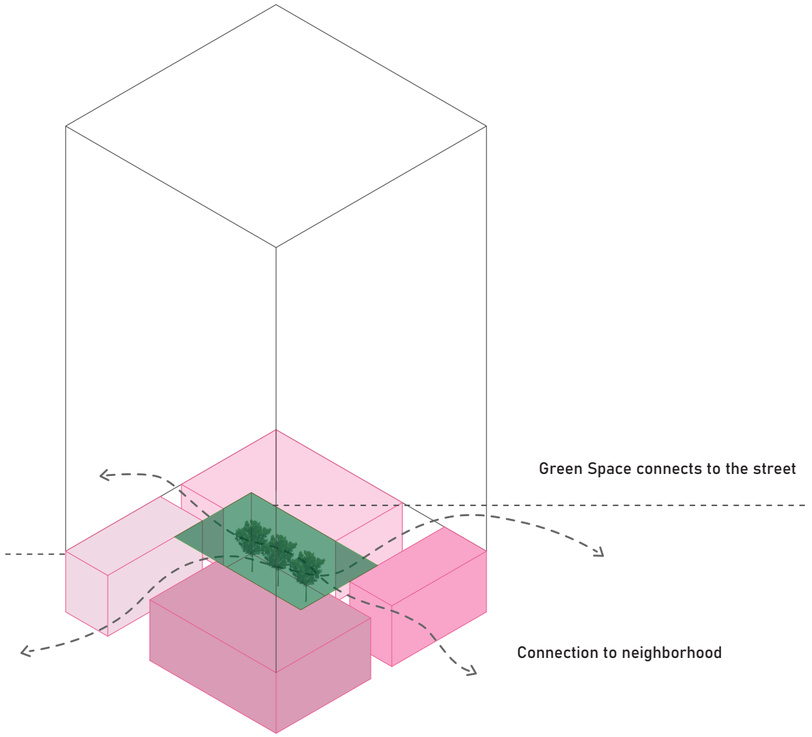


5. GARDENING MODULES

- Vegetable gardens
- Green Roof
- Greenhouse
- Free Terrace
- Playing /Gathering Spaces

SOCIAL MODULES

RENT
PER HOUR/ PER DAY



LIVING MODULES

RENT MODULES
PER MODULE

[INDOOR] INDEPENDENT MODULE

variations of independent indoor modules

BEDROOM
OFFICE
GREENROOM
PLAYGROUND
ADDITIONAL LIVING SPACE

[OUTDOOR] INDEPENDENT MODULE

variations of independent exte-
rior modules on the periphery o
Habitat 10.0

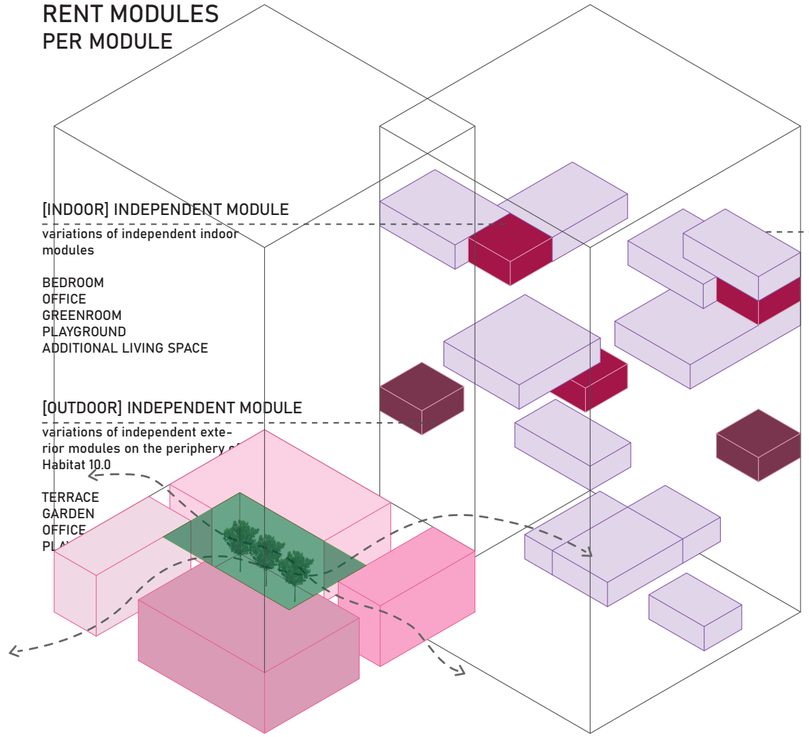
TERRACE
GARDEN
OFFICE
PL

BUY HOUSING
PER SQM

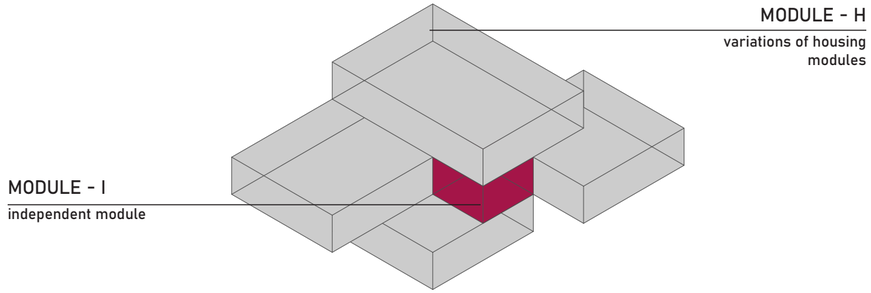
LIVING MODULES

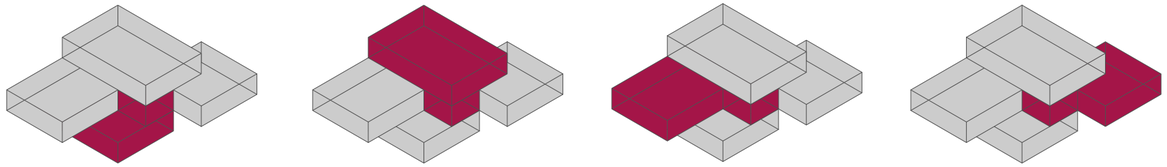
variations of housing modules for different families. contains basic sleeping, eating, living settings.

40 SQM
60 SQM
80 SQM
100 SQM



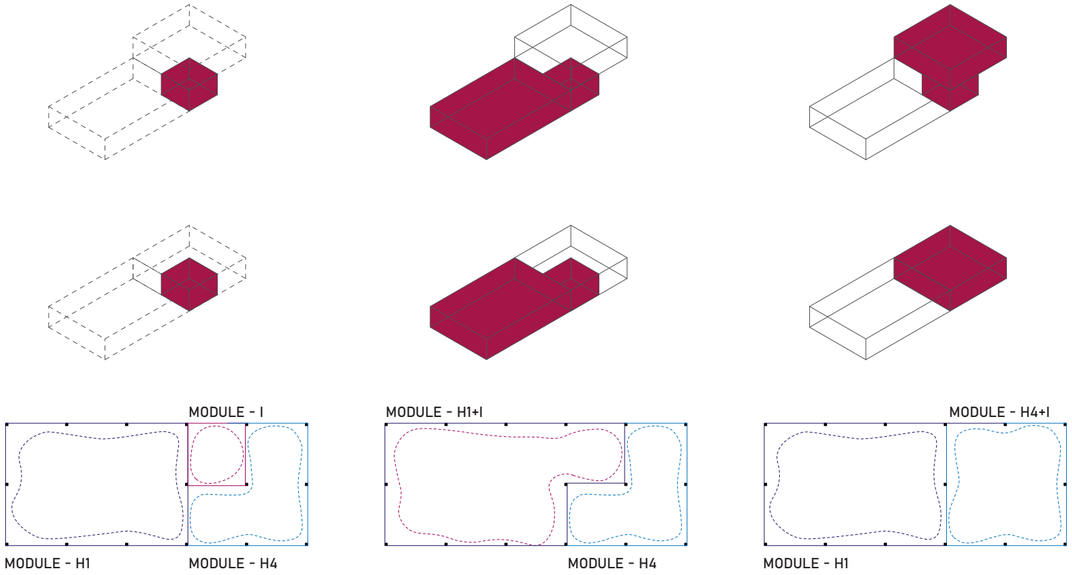
BUILDING CRITERIAS



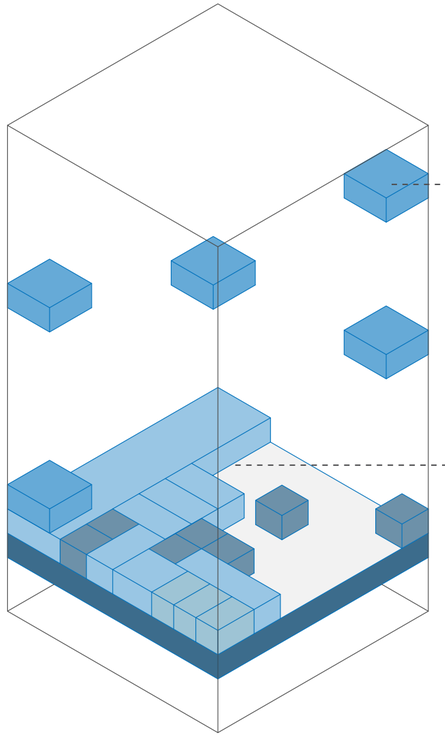


MODULE - I + MODULE - H1 | MODULE - I + MODULE - H2 | MODULE - I + MODULE - H3 | MODULE - I + MODULE - H4

INDEPENDENT MODULES



OFFICE MODULES



UPPER LEVELS
FOR
PRIVATE
ACCESS
(RESIDENTS)

LOWER LEVELS
FOR
SEMI-PUBLIC
ACCESS
(RENTEES)

RENT
PER MODULE PER MONTH

INDEPENDENT MODULES

Offices*

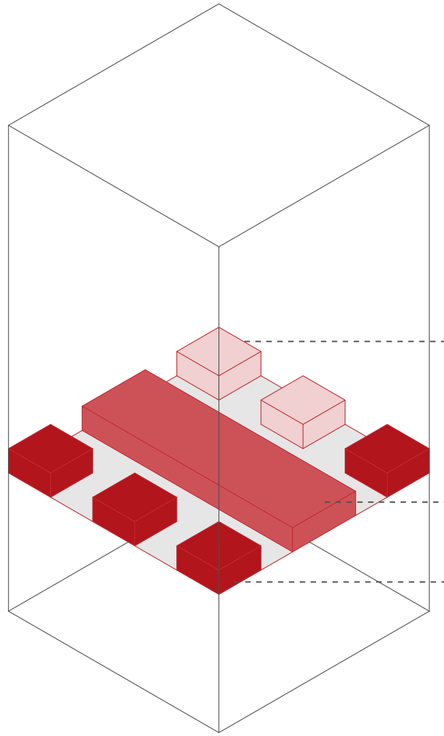
*in current scenario

RENT
PER SQM PER MONTH

OFFICE MODULES

Single Pod
Multi people Office
Interactive offices
Virtual offices

WELLNESS MODULES



ISOLATED
LEVEL

RENT
PER POD PER NIGHT

Q-POD

Self-isolationist Module
Allow for self-inflicted isolation

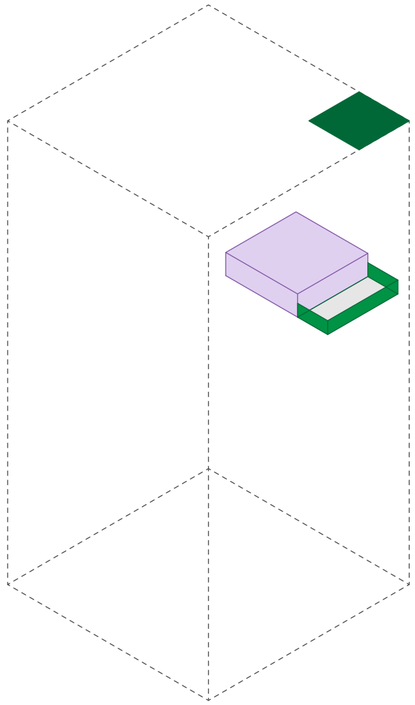
HEALTH CARE FACILITY

Intensive care unit
Nurse assistance for elderly / others

Q-POD

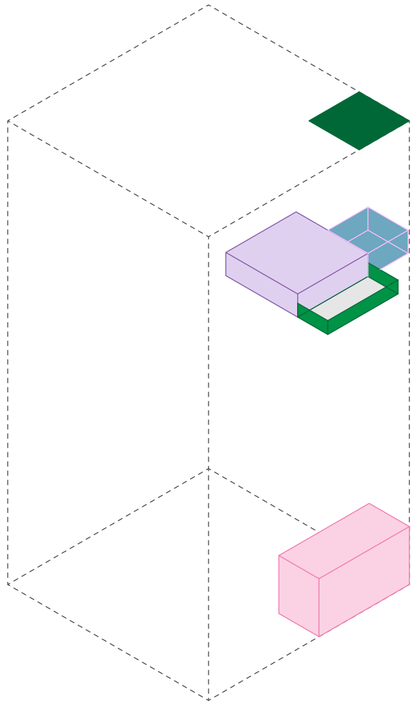
Quarantine Module for Basic
sleeping, eating

BUILDING CRITERIAS



JAN 2021

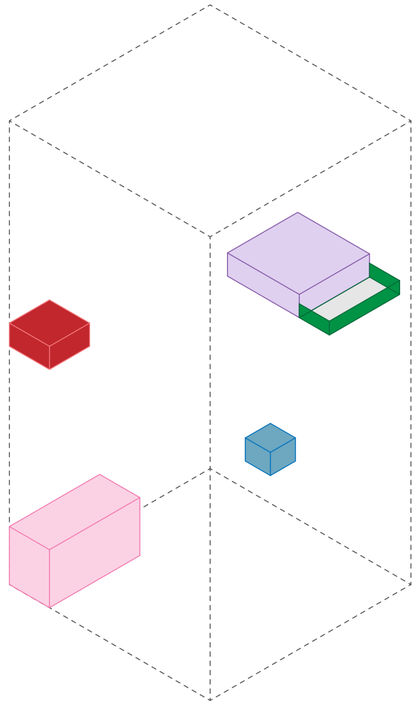
BUY	HousingModule
ADDITIONAL CHARGE	Balcony
RENT 1HOUR/DAY	Rooftop Garden



MARCH 2021

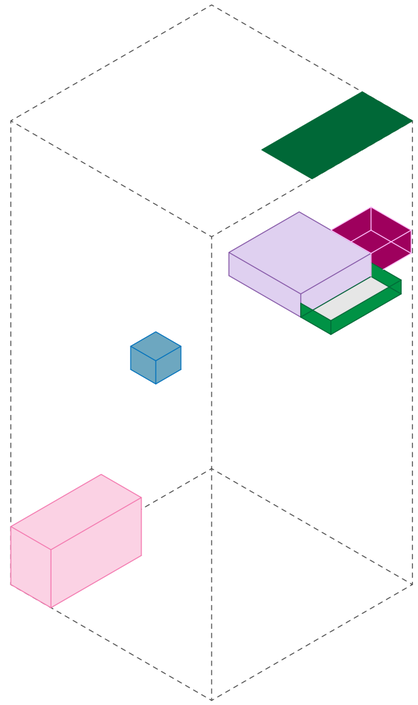
OWN	HousingModule
OWN	Balcony
RENT 1HOUR/DAY	Rooftop Garden
RENT MODULE-I	Office
RENT 1HOUR/DAY	Yoga Room

FLEXIBILITY IN DESIGN



JULY 2021

OWN	HousingModule
OWN	Balcony
RENT 1HOUR/DAY	Yoga Room
RENT 14 DAYS	Q-Pod
RENT 1MONTH	Office Pod



AUGUST 2021

OWN	HousingModule
OWN	Balcony
RENT 1HOUR/DAY	2 Rooftop Gardens
RENT 1MONTH	Office Pod
RENT 1HOUR/DAY	Yoga Room
RENT MODULE-I	Living Space

FLEXIBILITY IN SCNEARIOS

SCENARIO

70 LONG TERM

30 SHORT TERM

50 ADULTS & YOUNG ADULTS

20 CHILDREN

40 LIVING MODULES

30 INDEPENDENT PODS

10 SOCIAL MODULES
12 SLOTS EACH
120 SLOTS PER DAY

60 WORK MODULES
60 USERS PER MONTH

15 WELLNESS MODULES
15 USERS PER NIGHT

USERGROUP

LONG TERM USERS

Long term users own a living space in Habitat 10.0 and are present for a year at least, whether they are families, couples or individuals .

SHORT TERM USERS

Short terms users refer to people who rent living spaces for a shorter period.

08

THE EXAM-PLE OF HAMRA

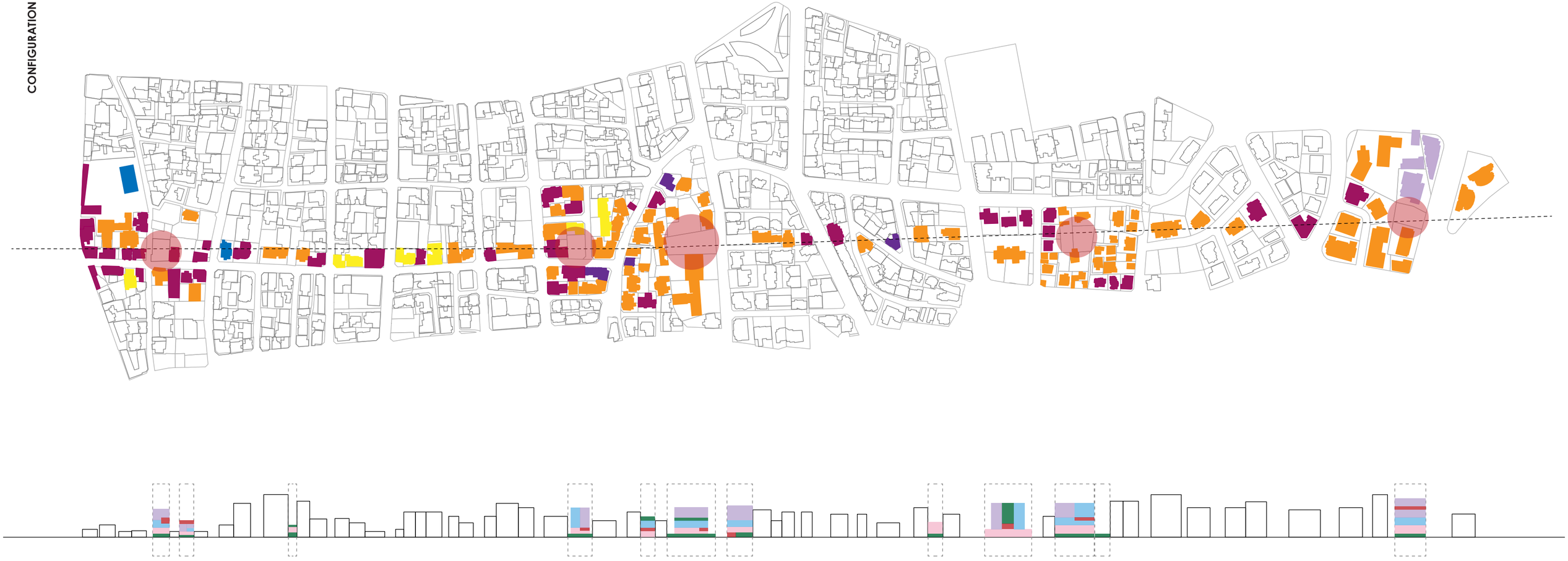
THE EXAMPLE OF HAMRA

Habitat 10.0 allows the creation of different configuration across the same city or in different cities. The section through Ras Beirut illustrates several types of configurations that are designed depending on the context in which they are present. Therefore, the adaptability of the building is dependent on what surrounds it. The building expands or retracts based on what is present or absent from its surroundings.

In order to prove the feasibility of Habitat 10.0 globally, it is necessary to prove its feasibility locally. I chose the neighborhood of Hamra in Beirut as a site and as an example for Habitat 10.0.

Zooming in into any site, irrelevant in which city, the first thing to do is understand the surrounding context and look for the five main surroundings criterias. I selected a site in the Hamra area and explored what it meant to insert Habitat 10.0 in this particular context.

CONFIGURATION DESIGN

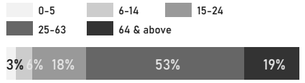


8,740

Total number of residents*

50%Males | 50%Females

72.2%	Lebanese	3.6 people / residential unit
879	Children(0-14)	
1,289	Youth(15-24)	
3,956	Adults(25-63)	
1,034	Elderly(65&above)	



Source: Population count by residential unit (Fberuary - March 2019 field survey)

1958 Lebanon Crisis
Sectarian tension and President Camille Chamoun's alliance with America caused American occupation of the airport and port. Hamra Street begins its building boom due to unrest in Downtown Beirut.

1975-1990 Lebanese Civil War

2005 Cedar Revolution

2006 July War
After the July 2006 War, anti-14 March government protests intensify in Downtown Beirut in December, leading shops to close. Economic activity moves to Hamra, which witnesses a renaissance.

7 May 2008

October 2019 -Today
17 October Revolution

COVID-19

INTERGENERATIONAL LIVING

COMMUNITY OF INSTABILITY

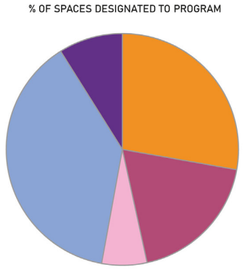
MIXED USE NEIGHBORHOOD

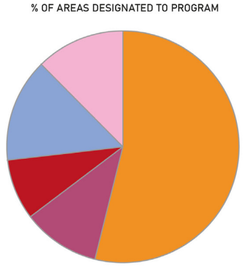
FLEXIBILITY IN DESIGN

MIXED USE RESIDENTIAL HABITAT 10.0

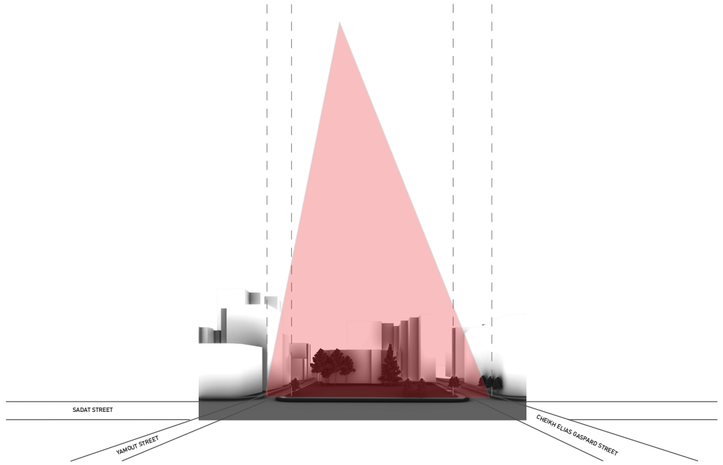
THE EXAMPLE OF HAMRA

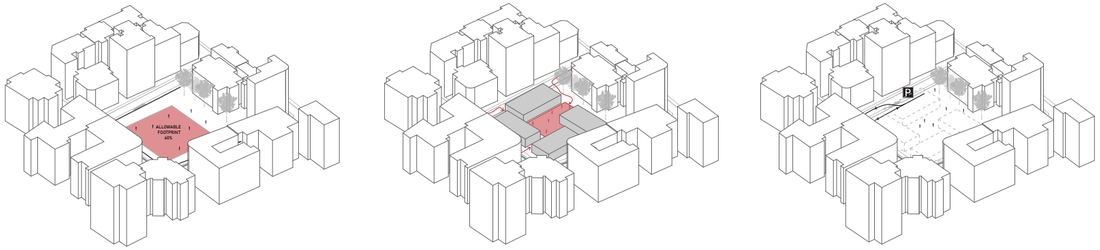
CONTEXT DEPENEDNT



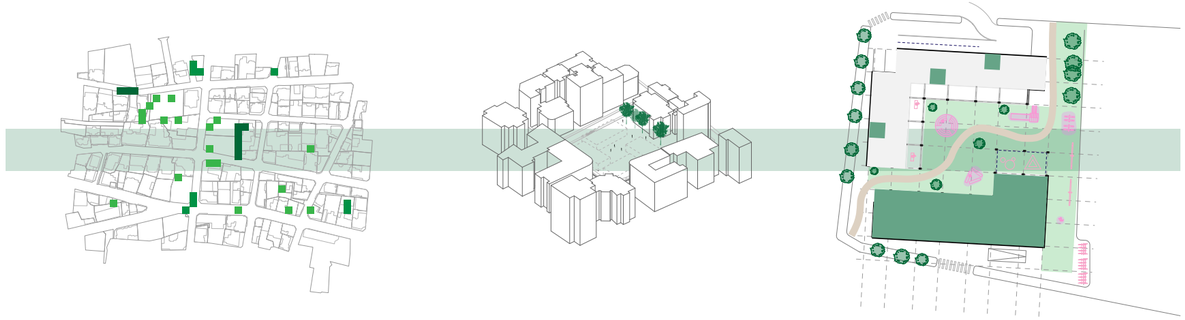


SITE ANALYSIS



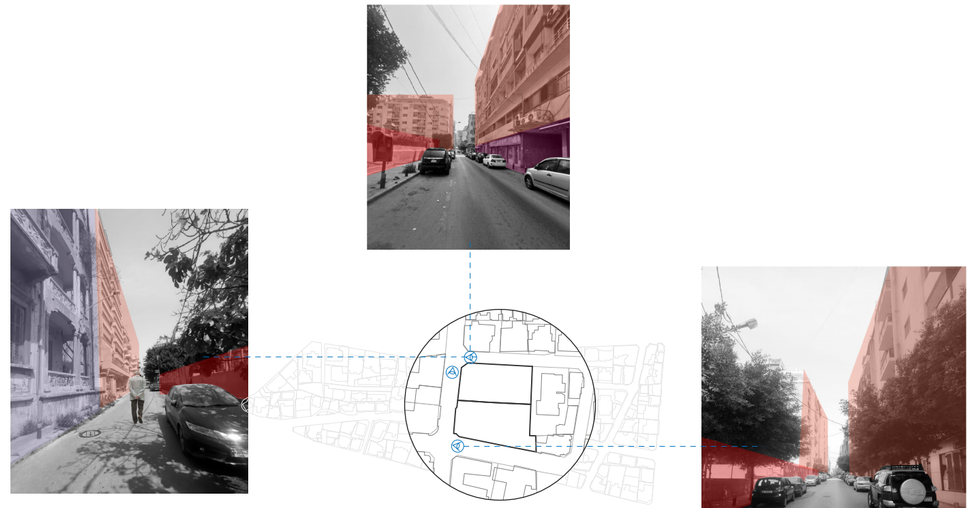


ENVIRONMENTAL STRATEGY

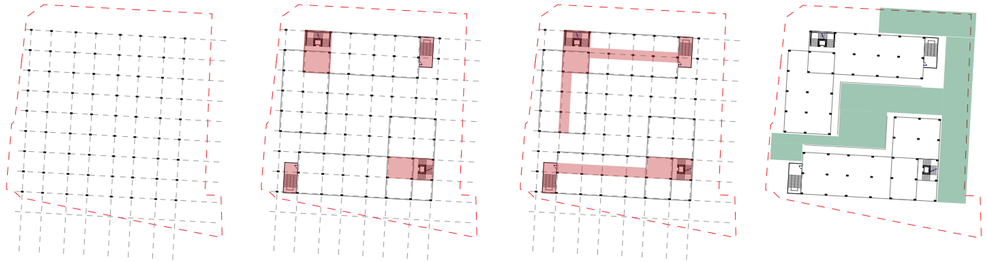


The Hamra area has 3 main characteristics that translate in the design itself. Based on a study by Relief Centre and UN Habitat, the neighborhood is an intergenerational living area where adults, youth and elderly co-exist and a mixed use neighborhood. Moreover, the constant instability present in the country is translated by an instability on the construction level. The evolution of the Hamra area over the years is an evolution of the habitat and the built environment. A community of instability means the need for a flexibility in design for Habitat 10.0. whether it is a pandemic or otherfators.

The site is currently an empty parking lot located in the Sadat street that connect the end of Bliss street to the end of Hamra street. Habitat 10.0 is not site dependent, but rather context dependent. Looking at the proportions present on this particular site indicate a lower presence of working and wellness spaces, meaning a convenient design would integrate these two programs in a bigger share in the proposal.

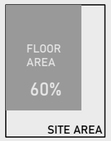


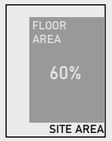
Commercial
Site
Residential

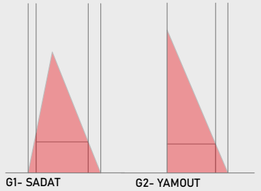


DESIGN STRATEGY

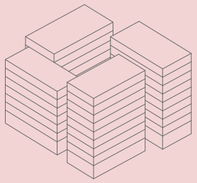
ZONE 3
REGULATIONS



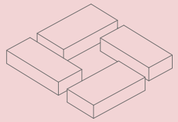




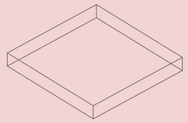
MASSING



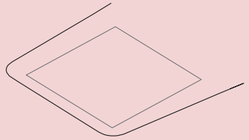
EXTRUSION OF HEIGHTS
MAXIMUM GABARIS



SEPERATION OF VOLUMES

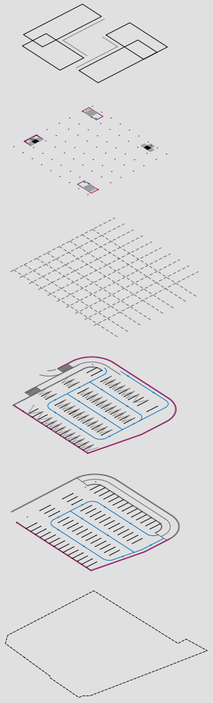


EXTRUSION OF MASS

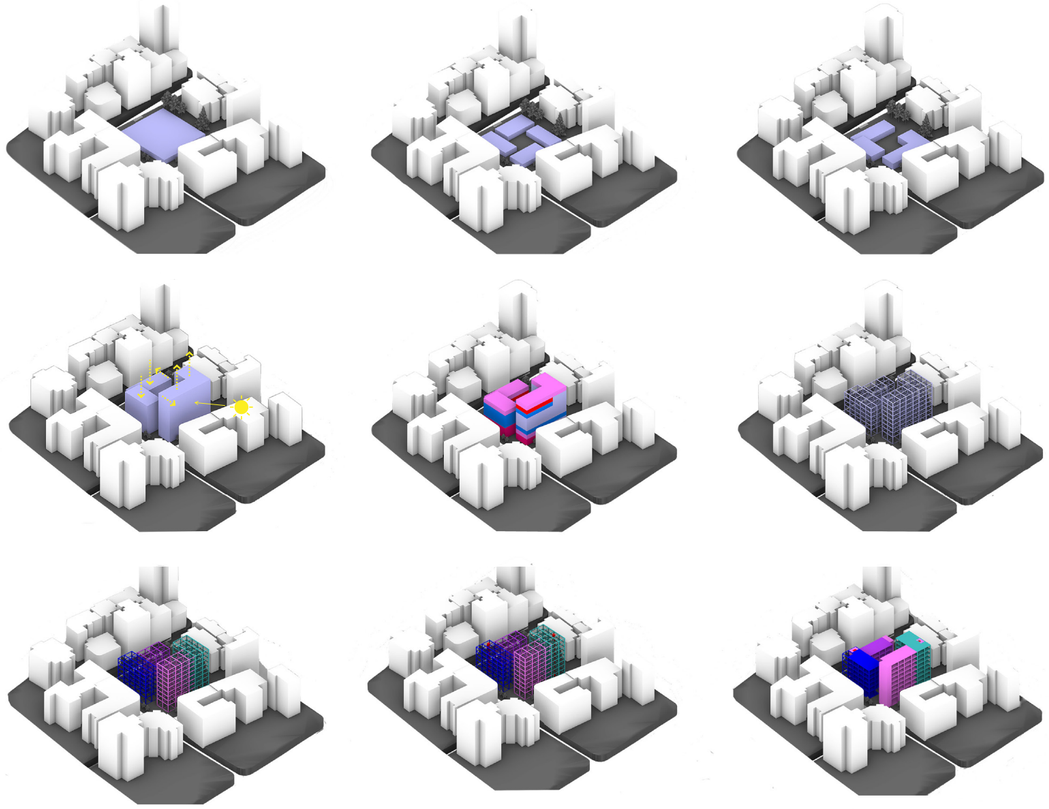


60% ALLOWABLE FOOTPRINT

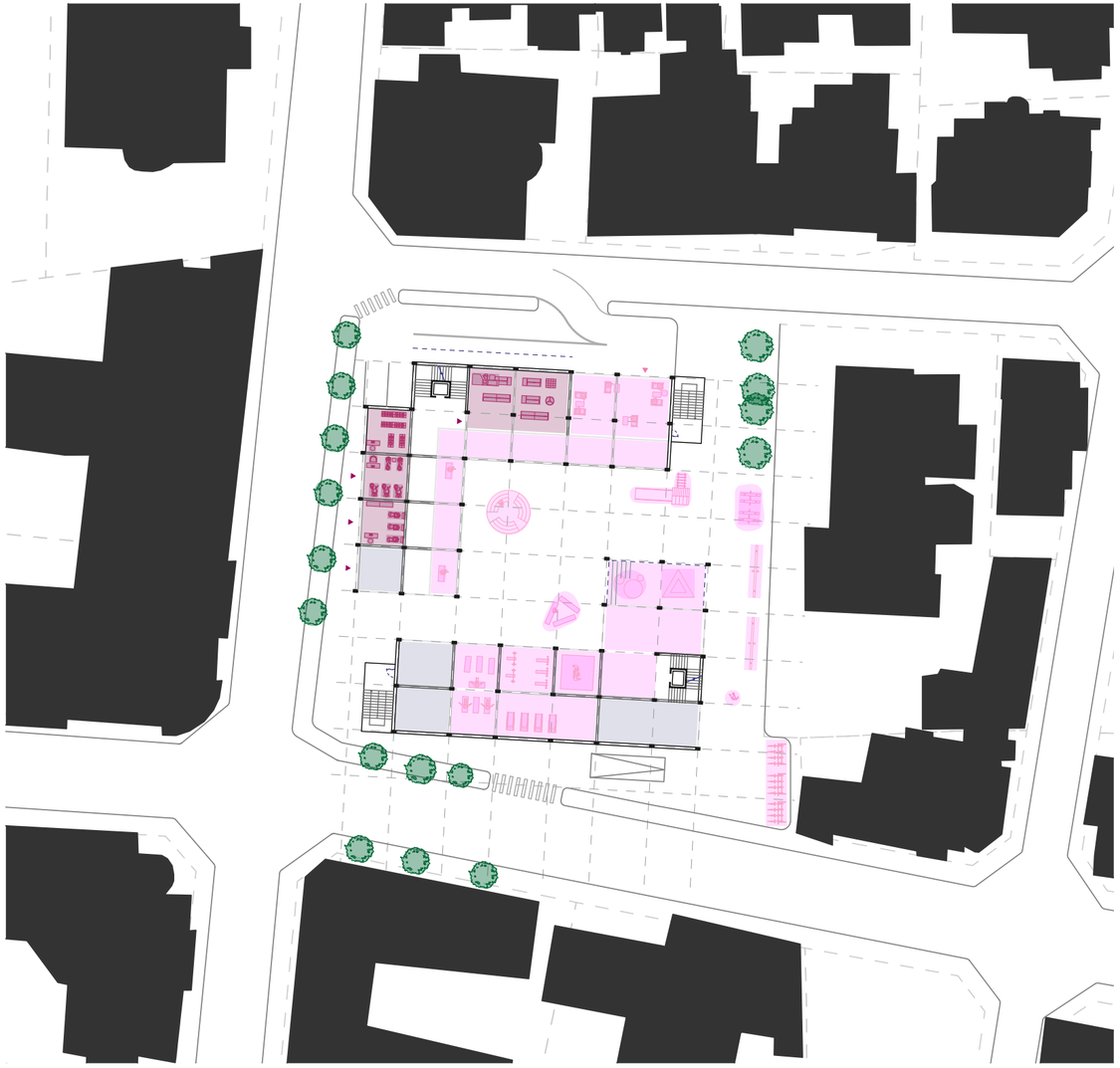
STRUCTURE



DESIGN PROCESS



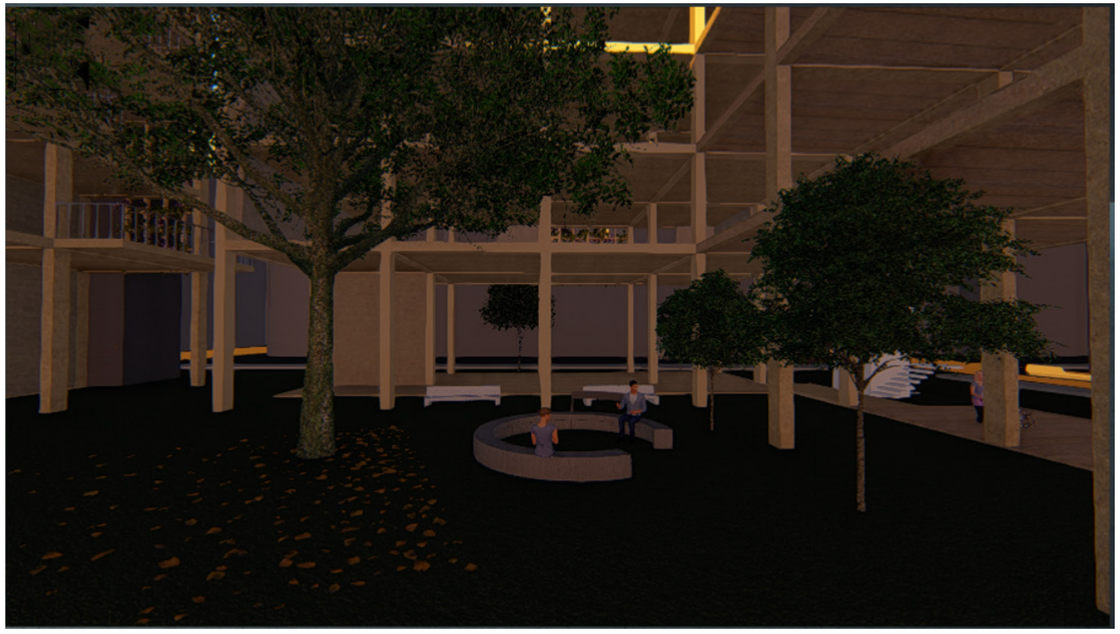
PLANS



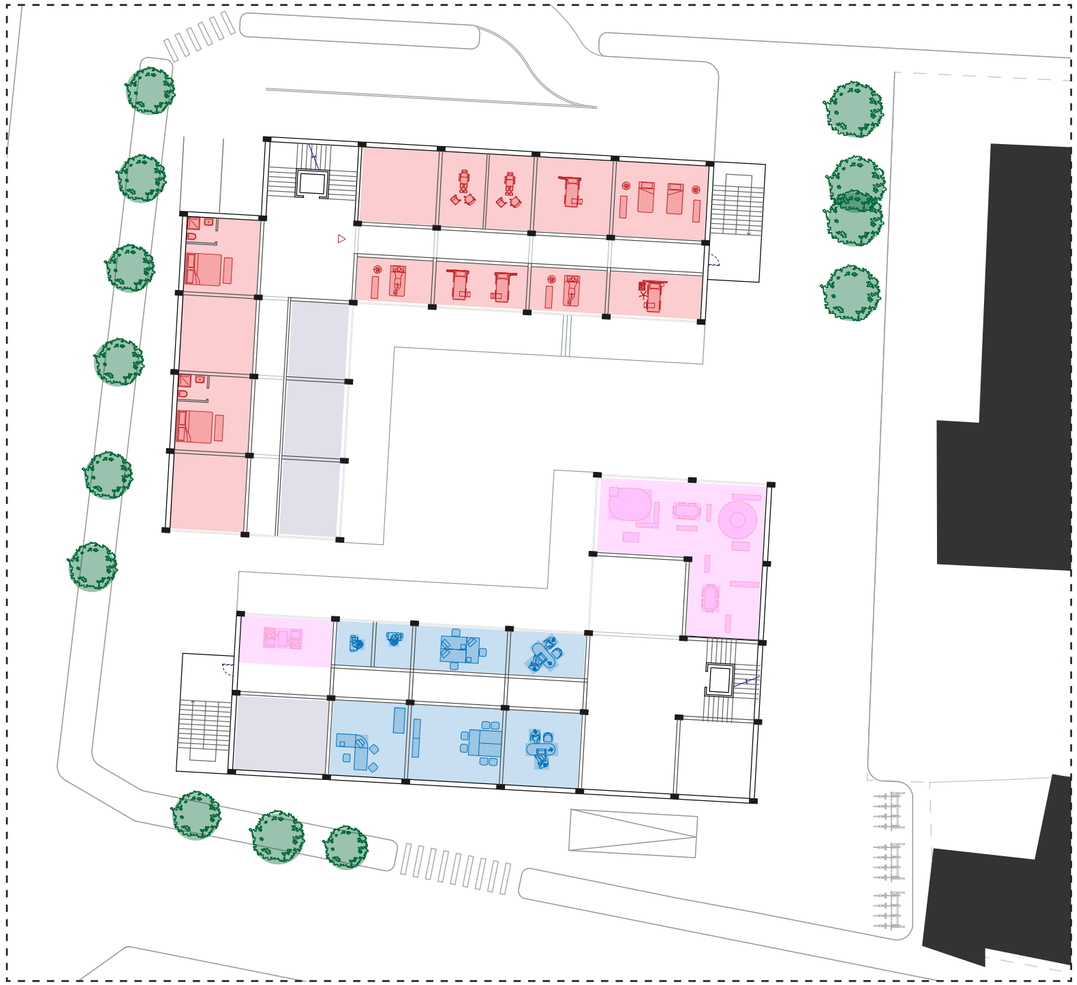
GROUND FLOOR PLAN

VIEWS

VIEWS

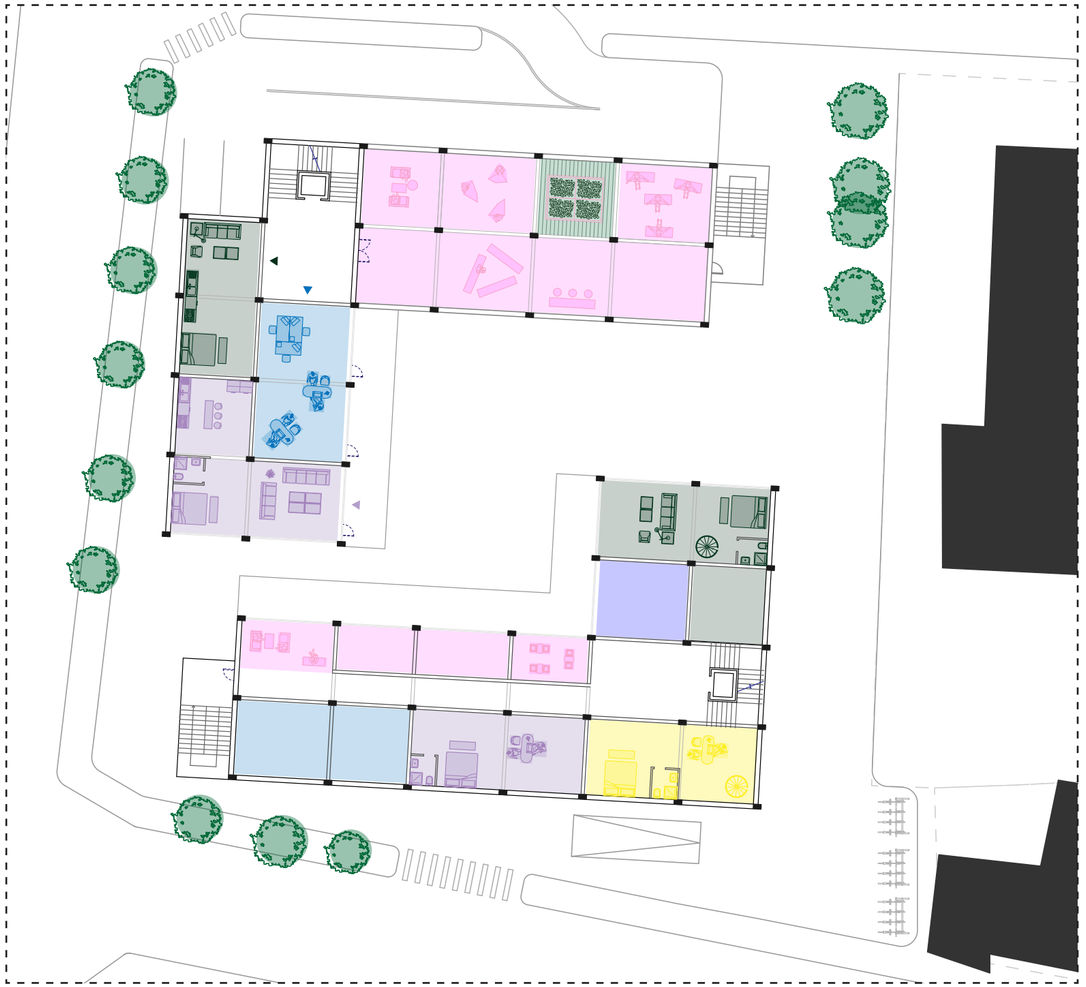


FIRST FLOOR PLAN



SECOND FLOOR PLAN

FIFTH FLOOR PLAN



EIGHTH FLOOR PLAN

09

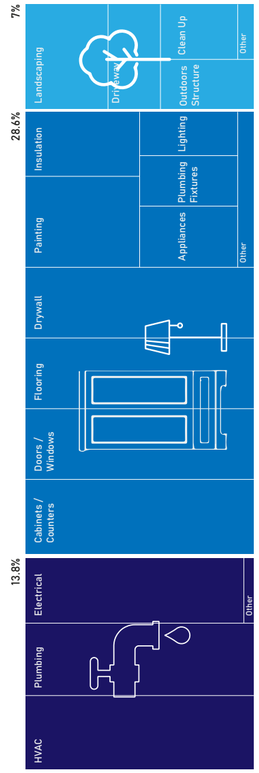
THE EXECU-TION

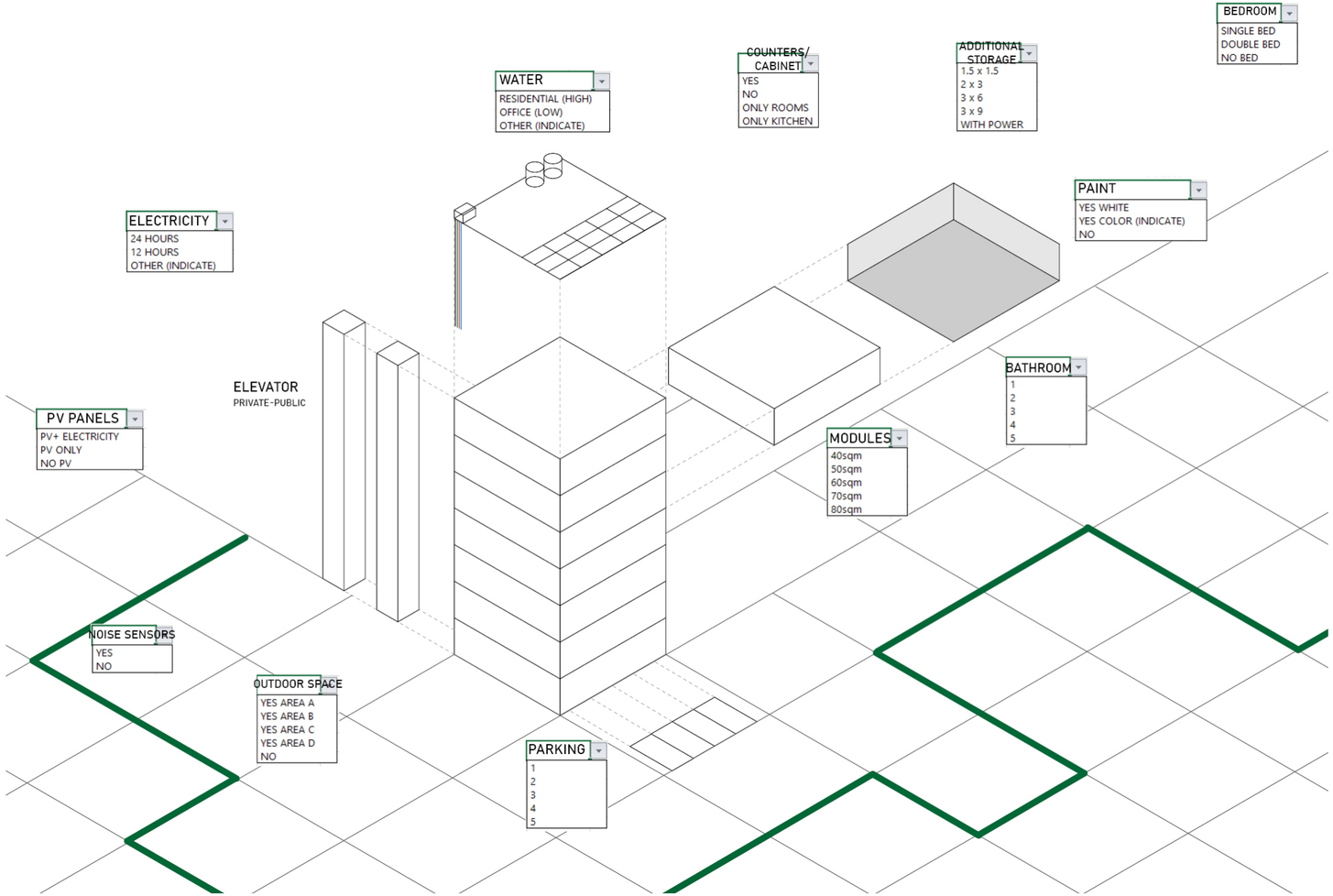
THE EXECUTION

The proposal is for a maximized potential of Habitat 10.0 which is translated by creating a connection to the neighborhood and community and opening up towards the outside. The massing takes for base a grid structure that starts from the parking. The extrusion of mass is followed by a seperation of volumes to create an inner void and an extrusion of heights to the maximum potential.

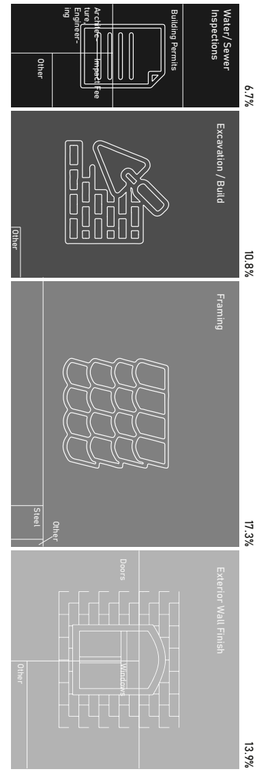
Habitat 10.0 is user dependent and user centered , which means selective choices can be made by the residents in order to cater for specific needs. By understanding the needs of individuals in these groups in addition to the context, one can design for several options and combinations of units that can vary from one family to another.

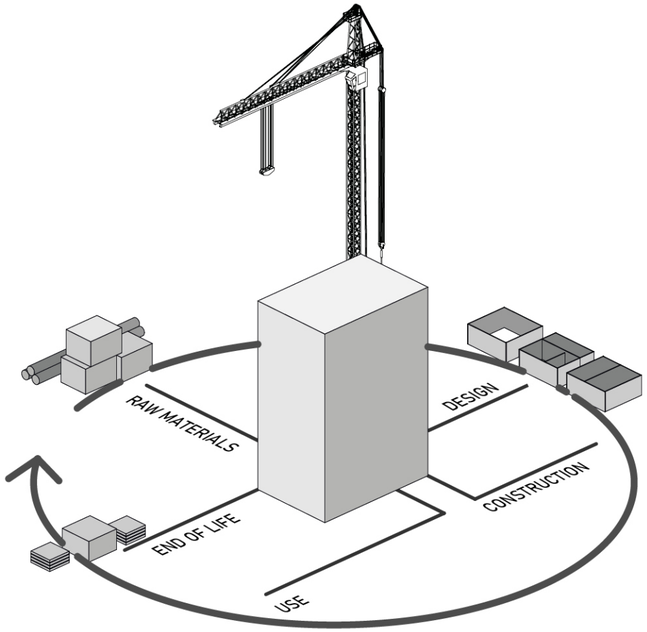
Habitat 10.0's construction is essential for the flexibility of the design and the constant changes that can happen to the space.
The adoption of a circular economy in construction can allow designing for disassembly. This means that the design construction products can be easily separated into components and can be reused, reassembled, reconfigured and eventually recycled.


7%
Landscaping
Driveway
Clean Up
Outdoors Structure
Other
28.6%
Insulation
Lighting
Plumbing Fixtures
Appliances
Painting
Other
Drywall
Flooring
Doors / Windows
Cabinets / Counters
13.8%
Electrical
Other
Plumbing
HVAC
FLEXIBLE


BEDROOM
SINGLE BED
DOUBLE BED
NO BED
WATER
RESIDENTIAL (HIGH)
OFFICE (LOW)
OTHER (INDICATE)
COUNTERS/ CABINET
YES
NO
ONLY ROOMS
ONLY KITCHEN
ADDITIONAL STORAGE
1.5 x 1.5
2 x 3
3 x 6
3 x 9
WITH POWER
ELECTRICITY
24 HOURS
12 HOURS
OTHER (INDICATE)
PAINT
YES WHITE
YES COLOR (INDICATE)
NO
ELEVATOR
PRIVATE-PUBLIC
BATHROOM
1
2
3
4
5
PV PANELS
PV+ ELECTRICITY
PV ONLY
NO PV
MODULES
40sqm
50sqm
60sqm
70sqm
80sqm
NOISE SENSORS
YES
NO
OUTDOOR SPACE
YES AREA A
YES AREA B
YES AREA C
YES AREA D
NO
PARKING
1
2
3
4
5

FIXED


Water/ Sewer Inspections
Building Permits
Architectural Interface Engineering
Other
6.7%
Excavation / Build
Other
10.8%
Framing
Steel
Other
17.3%
Exterior Wall Finish
Doors
Windows
Other
13.9%



PRE-FABRICATION

High grade products with high recycled content
Materials with high durability used in structural elements

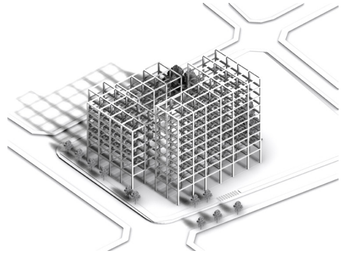
DELIVERY

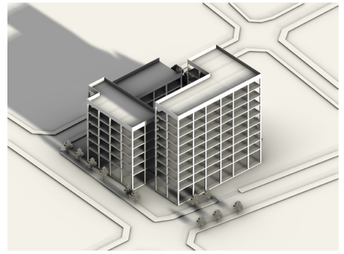
ASSEMBLY

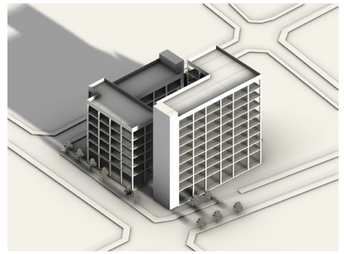
Design for dissassembly
Design construction products so they are easy to separate into components that can be reused, reassembled, reconfigured, recycled

CUSTOMIZED HOME

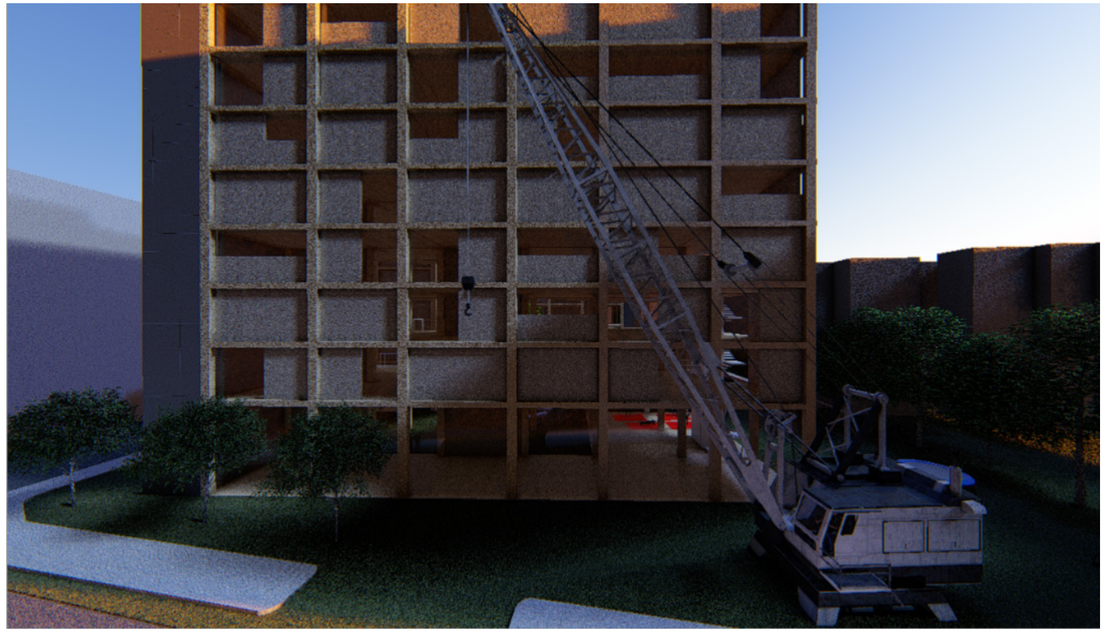
Extension of construction service life
Renovate, improve maintenance, upgrade, repair and adapt constructions



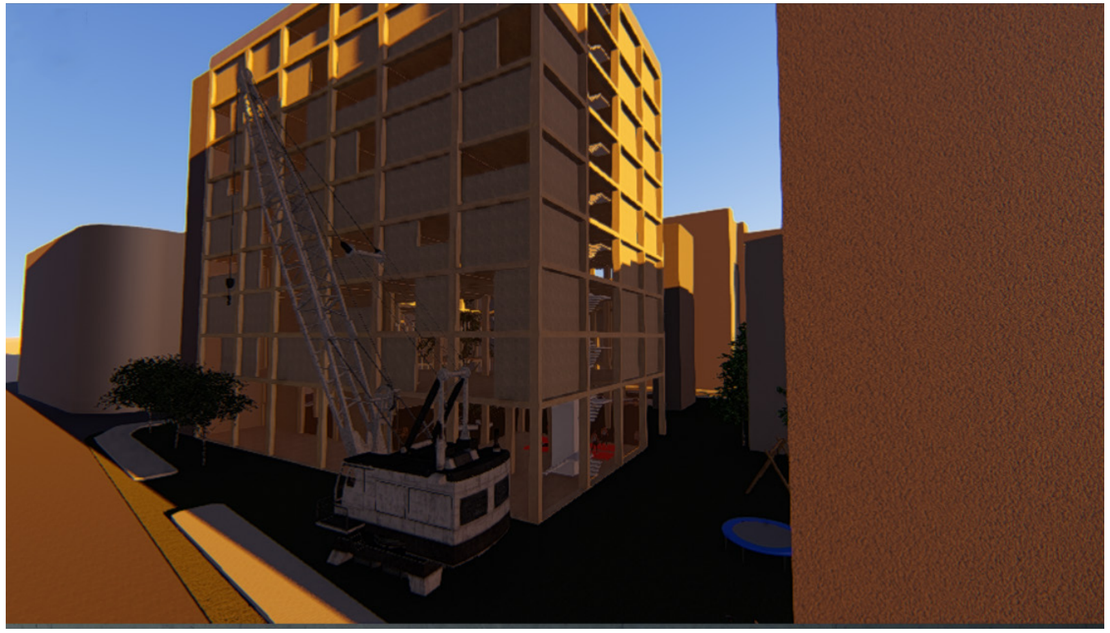




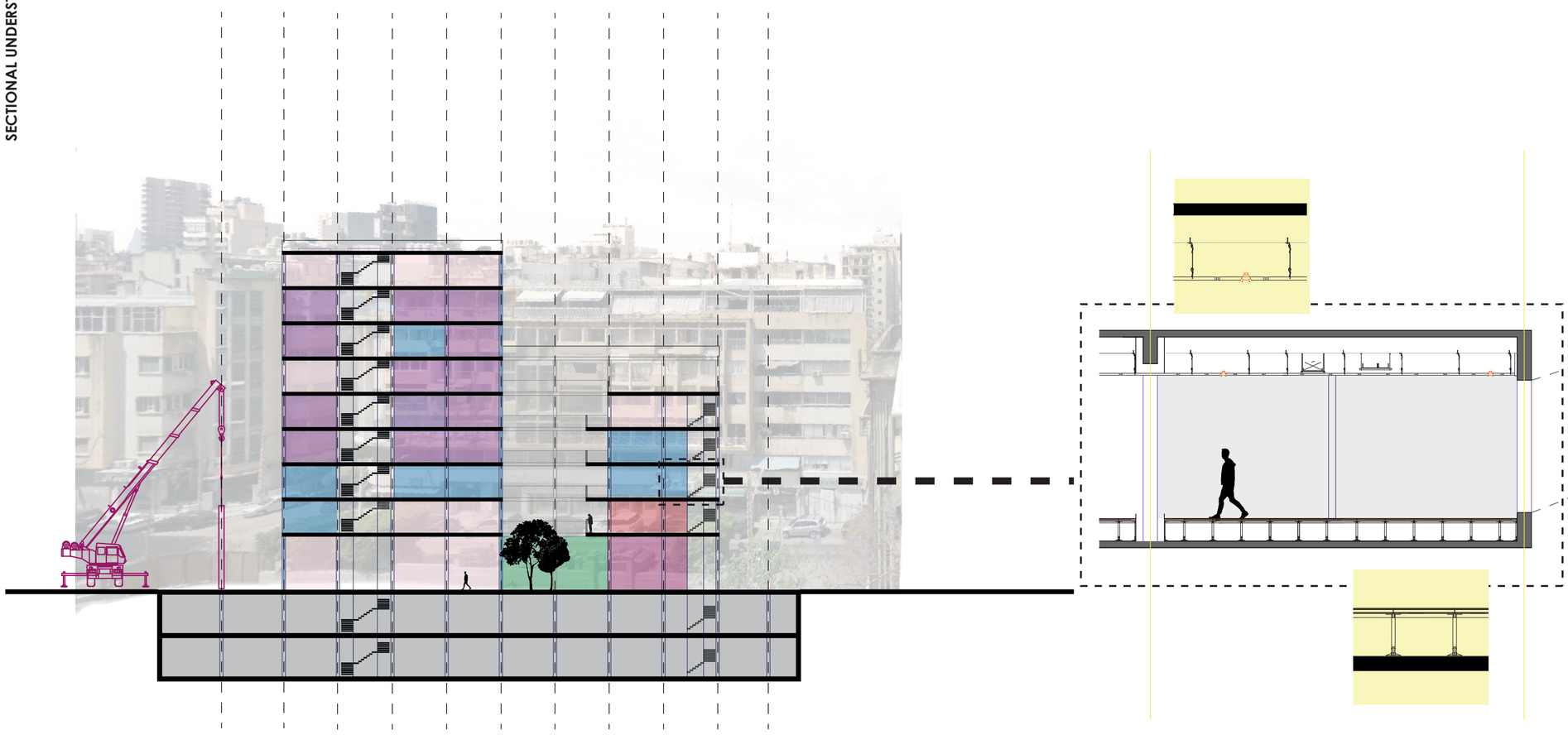
VIEWS

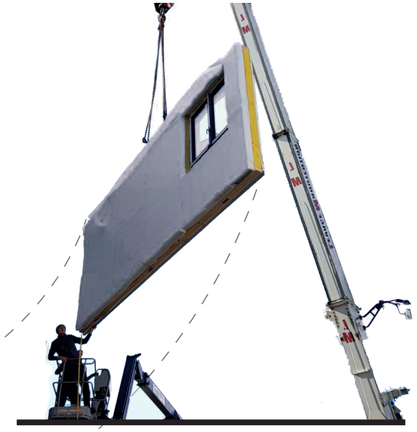


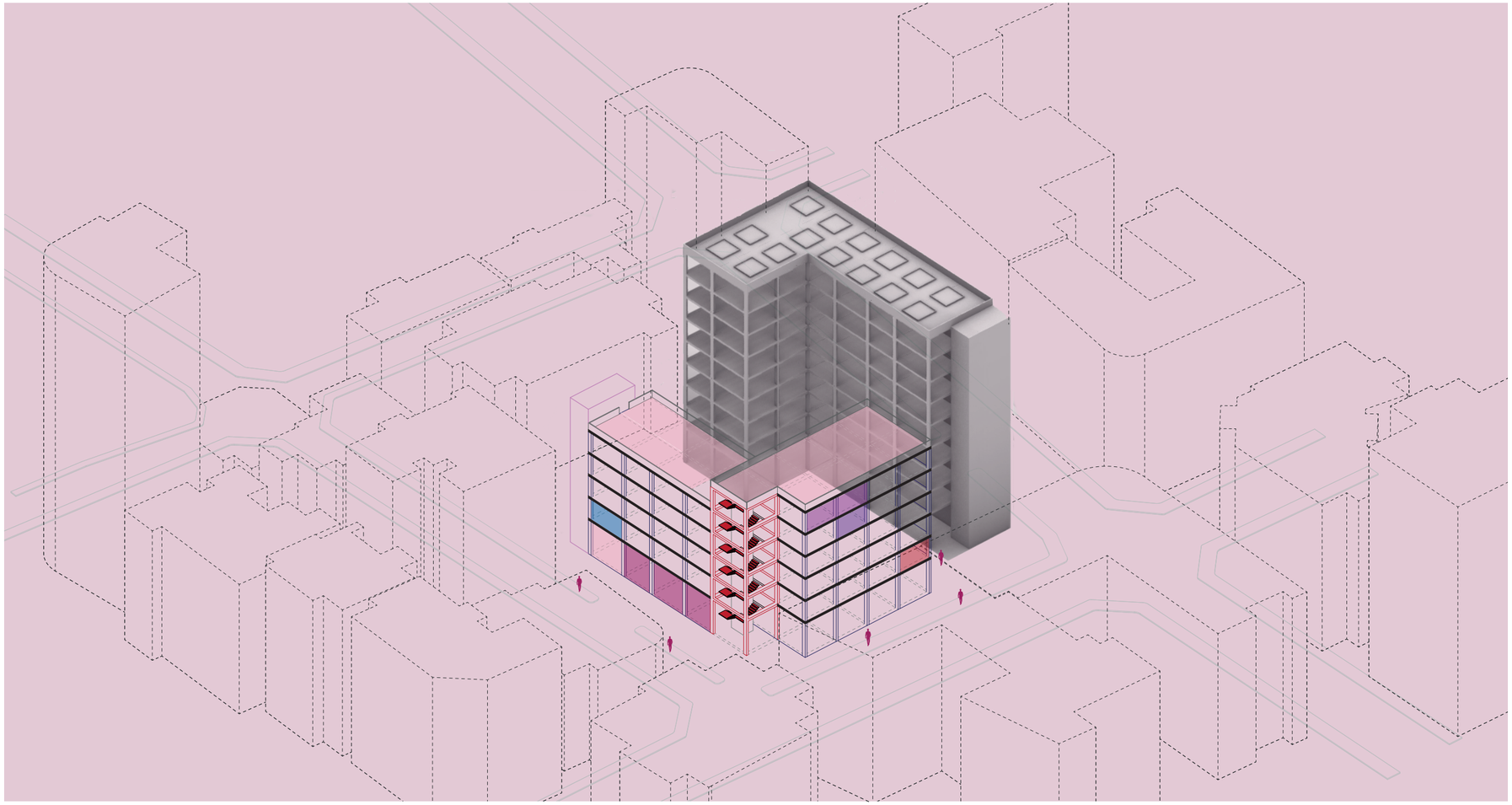
VIEWS



SECTIONAL UNDERSTANDING







10

CON-
CLU-
SION

Designing for Habitat 10.0 is not about designing for COVID19. The pandemic and our state of isolation have created pleasure for some people in the simple acts of staying at home, of working from home: a pleasure of domesticity. Habitat 10.0 is a new domestic culture and a new way of living post COVID. It is not a temporary shift of things to adapt to a pandemic and go back to 'normal' once it is over. It is a long-term shift to how we live and how we make use of our spaces meaning or how our spatial experiences change. Habitat 10.0 is a social theory of habitat and a proposal for the creation of a new living environment based on a hybrid living environment.

Confinement

Canter, D. (1977). The psychology of place. London: Architectural Press.
Feig, Samantha, "The Architecture of Confinement: An Exploration of Spatial Boundaries in Wright, Poe, and Foucault" (2018). Senior Projects Spring 2018. 230.
Robert Sommer, Personal Space: The Behavioral Basis of Design
Harding, Desmond. "THE POWER OF PLACE: RICHARD WRIGHT'S 'NATIVE SON.'" CLA Journal, vol. 40, no. 3, 1997, pp. 367–379. JSTOR, www.jstor.org/stable/44324980.

Captivity

Undocumented: The Architecture of Migrant Detention, The Architectural Observer
Rem Koolhaas, Voluntary Prisoners of Architecture
Jamie Somers Emberson, The Architecture of Confinement: Positively Influencing Rehabilitation and Reintegration
International Committee of the Red Cross ' water sanitation, hygiene and habitat in prisons' (2005)
Julius Panero and Martin Zelnik, "human dimension & interior space" (1979)
Ministry of Health and Long Term Care "Long term care home design manual" (2009)
Rosenberg, C. (2019, December 04) .What the C.I.A.'s Torture Program Looked Like to the Tortured. (Drawings by Abu Zubaydah, Courtesy Mark P. Denbeaux)

Covid and the built environment

Naglaa A. Megahed, Ehab M. (2020). Ghoneim,Antivirus-built environment: Lessons learned from Covid-19 pandemic, Sustainable Cities and Society, (61).
Froimson, J. R., Bryan, D. S., Bryan, A. F., & Zakrison, T. L. (2020). COVID-19, home confinement, and the fallacy of "safest at home". American Journal of Public Health, 110(7), 960-961.
Takenaga, L. (2020). Coronavirus briefing: Covid-era architecture.
Streb, J. (2020). COVID forces us to reevaluate how we inhabit buildings. Rochester Business Journal, 35(13), 10.
Sergey Makhno. (25 March 2020). Life after coronavirus: how will the pandemic affect our homes?
Diana Budds. (May 17 2020). Design in the age of pandemics
Aaron Betsky. (June 2 2020). Design in a Post-COVID-19 World Aaron Betsky on how designers should mobilize to tackle the most pressing challenges of the moment.
Jennifer Castenson. (June 8 2020). How Working From Home Is Changing The Way We Think About Where We Live.
Douglas, M. 1972. "Symbolic Orders in the Use ofDomestic Space." In Man, Settlement and Urbanism,edited by P.J. Ucko, R. Tringham, and G.W. Dim-bleby, 513–521. London: Duckworth