THE KOREAN URBAN BLOCK
a proposal to re-define the urban block as a sustainable framework that can adapt to the changes in Seoul
Thesis Project Introduction

Semester 1 (groupwork)
Vertical Cities Asia Competition

Semester 2
Individual Thesis

Participating Universities

- National University of Singapore (host)
- Tongji University
- University of Tokyo
- ETH Zurich
- University of Michigan
- University of Pennsylvania
- Chinese University of Hong Kong
- Tonghua University
- Technical University of Delft
- University of California Berkeley
- National University of Singapore (host)
Objective: To design a Master Plan for 100,000 people to live and work 50% residential program

Location: Seoul, South Korea
Site Area: 1.2 km² Railyard Yongsan District

Theme: “Everyone Ages”
Studio Structure

4 Research Teams:

6 Weeks Research
4 Weeks Analysis

2 Proposals

10 Weeks Design
3 Weeks Production

1 Winning Master Plan
New York City
It is estimated that a further 500 million people will be urbanised in the next five years and projections indicate that 60% of the world’s population will be urbanized by 2030.
Growth of Seoul

Population

1920: 0.3 Million
1930: 0.7 Million
1940: 2.4 Million
1950: 7.2 Million
1960: 8.3 Million
1970: 10.5 Million
1980: 10.5 Million

Population
Radical Transformation

View of Seoul 1949

View of Seoul 2001
Seoul’s Identity?
Observation

Urban Housing

Seoul
Transformation of Urban Form
Research Question

How does the evolution of Urban housing impact the identity of the city?
Urban Housing Evolution

pre-urbanization
single family homes
no building regulations

1970’s
government funded
apartment building

1990’s
residential towers
private, luxury

2010’s
midrise grid
compromise typology

evolution coincides with population growth
and results in increasing density over time
urban patchwork
urban patchwork
Neighborhoods being destroyed

Low dense
Unorganized
No hierarchy of streets or public vs private space

Mixed-Use
Sense of community
Current urban forms not sustainable
affordable housing
tower developments
korean grid
Transformations in Competition Site

3 areas within our site location that were demolished and replaced by residential towers in the past decade
My Site Location

Organic community
Site Orientation

Main Elements
Station
Water
electronic market
railyard
Unorganized Community
Site Research
Site Evaluation

1. Density + FAR

2. Program

3. Public Space
Site Evolution

1990
OEC Plan
FAR Comparison

Sample Area 40,000 m²
Footprint 19,000 m²
47.5% Coverage
Number of Floors 3
FAR 1.5

Sample Area 40,000 m²
Footprint 4,000 m²
10% Coverage
Number of Floors 25
FAR 2.5

Sample Area 40,000 m²
Footprint 26,000 m²
65.5% Coverage
Number of Floors 4
FAR 3.6
Research Conclusion 1: Density

Density alone cannot define urban form
Program within OEC Plan is determined from a too large scale.
On plot scale: Monofunctional
Towers on Isolated Plots

<table>
<thead>
<tr>
<th>footprint</th>
<th>900</th>
<th>625</th>
<th>625</th>
<th>500</th>
<th>400</th>
<th>900</th>
<th>300</th>
<th>400</th>
<th>400</th>
<th>400</th>
<th>400</th>
</tr>
</thead>
<tbody>
<tr>
<td>floor area per bldg</td>
<td>36000</td>
<td>25000</td>
<td>14750</td>
<td>15000</td>
<td>12000</td>
<td>22400</td>
<td>7500</td>
<td>8000</td>
<td>8000</td>
<td>8000</td>
<td>8000</td>
</tr>
<tr>
<td>floor area per type</td>
<td>72000</td>
<td>50000</td>
<td>37500</td>
<td>30000</td>
<td>12000</td>
<td>90000</td>
<td>52000</td>
<td>32000</td>
<td>8000</td>
<td>88000</td>
<td>8000</td>
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</table>

- footprint
- height
- floors
- units per floor
- inhabitants

<table>
<thead>
<tr>
<th># of Bldgs</th>
<th>2</th>
<th>2</th>
<th>2</th>
<th>2</th>
<th>1</th>
<th>4</th>
<th>7</th>
<th>4</th>
<th>1</th>
<th>11</th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td>inhabitants min</td>
<td>800</td>
<td>640</td>
<td>480</td>
<td>480</td>
<td>240</td>
<td>1000</td>
<td>1050</td>
<td>480</td>
<td>120</td>
<td>1320</td>
<td>120</td>
</tr>
<tr>
<td>inhabitants max</td>
<td>1680</td>
<td>1680</td>
<td>1260</td>
<td>960</td>
<td>490</td>
<td>2000</td>
<td>2100</td>
<td>1280</td>
<td>320</td>
<td>3520</td>
<td>320</td>
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</tbody>
</table>

- tower in park
- block cov. 10%
- green cov. 90%
Scattered Program
Scattered Program

[Diagram with scattered functions connected by lines, indicating a network or system with various components.]
Research conclusion 2: Program

Program does not relate to the scale on which it performs
Open Space in Seoul

Green Space

31.9% 
19,420 ha
Green Space in Seoul

with mountains 5.6 m² p.p.
without mountains 5.6 m² p.p.

<table>
<thead>
<tr>
<th>City</th>
<th>Population</th>
</tr>
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<tbody>
<tr>
<td>Tokyo</td>
<td>13,090</td>
</tr>
<tr>
<td>Peking</td>
<td>668</td>
</tr>
<tr>
<td>New York</td>
<td>9,602</td>
</tr>
<tr>
<td>Mexico City</td>
<td>5,643</td>
</tr>
<tr>
<td>Berlin</td>
<td>3,792</td>
</tr>
<tr>
<td>Zurich</td>
<td>3,940</td>
</tr>
<tr>
<td>Seoul</td>
<td>?</td>
</tr>
</tbody>
</table>

**17,046 / Km²**

*Hyper-Density results in very little open space.*
The crisis of streets

1st
Mexico USA
13.6 9.2 7.5
Poland
8.7
South Korea
3rd

The crisis of streets

Number of pedestrians who died from traffic accidents per 100,000 people (estimation of 2007):

<table>
<thead>
<tr>
<th>Country</th>
<th>Death Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>South Korea</td>
<td>4.61</td>
</tr>
<tr>
<td>Hungary</td>
<td>2.86</td>
</tr>
<tr>
<td>Greece</td>
<td>2.11</td>
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<tr>
<td>Portugal</td>
<td>2.01</td>
</tr>
<tr>
<td>Japan</td>
<td>1.9</td>
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</table>

Pedestrian deaths in Korea occurred in narrow side streets with a width of 13 meters or less.

Streets as collective space

Pedestrian deaths

Choatic and unsafe streetscape
Parking space in Seoul

Chaotic parking fills the streets
Collective space

Public space is resulting space between buildings
Research Conclusion 3: Collective space

Public space is not or inefficiently organized
Design Question?

How to re-frame urban form [the inextricable relationship between: DENSITY, PROGRAM & PUBLIC SPACE, ] and stimulate social interaction and re-establish sense of community?
Program Integration Related to Scale

[Diagram showing various categories such as Culture, Health, Municipal, Hotel, Culture, Retail, Food & Beverage, Education, Office, Residential, clock, car, and CO².]
compact center core is the foundation for establishing pedestrian neighborhoods, eliminating automobile dependency.
mixed-use program around a center core will increase efficiency and establish an orientation and identity for the community.
social program around center courtyard to create a vibrant collectivespace to stimulate social interaction
local program placed just outside of the center core which keeps the neighborhood compact and all local program is within walking distance.
community program is located on the outer part of the first ring, primarily functions that also function on a district scale near the outer residential blocks.
urban program is a program that functions on a city scale. It is located closer to the main transportation networks of the city.
16,400m² 16,800m²

Office
Residential
Social
Permanent
Retail
Shops
circulation

30 - 45 m²
45 - 60 m²
60 - 80 m²
80 - 100 m²
100 - 135 m²
135 - 150 m²
150 m² +

affordable luxury

Exhibition
Performance
Retail
Shops
Cafe’s/ Restaurants
Permanent
Incubator
Flexible workspace

Social
ground floor to level 3
+0.00, to +10.80m

Office
level 3 & 4
+080, to +2160m
Parking proposal

Frees up the entire ground floor under buildings as well as in the streets
Lift residential and put parking underground to free ground floor for mixed use program.
Office ring defines the urban block and creates a frame for the program underneath. establish a new urban form.
To create density new residential is added.
Slender towers provide a great vantage point of the city.

Spaced through the urban fabric, they are recognizable and return a sense of identity to its resident.
Access to public square
Parking and Spacial Provocation Elements / Scale

emerge into the public square from parking
ground floor program

expandable into collective space

section
Visual connection to the public square extends the impact of the public space beyond the block.

Stacked Service and Circulation
facade concept

program can determine accessibility from square

completely open

folded panels stack in front of service and circulation cores

partially open

completely transformable facade.
facade concept

- Sliding pivot door that opens to public square
- Recessed profile for sliding mechanism, minimizing frame
- Seamless transition from inside to outside
- Glass in front of aluminum profile, maximizing transparency
Office construction above is independant from ground floor.
Office
office and tower entrances

direct entrance from street to offices
flexible office grid

1500x1500 grid

standardized 4,5 and 3m office configurations

circulation ring
Incubator
flex offices
start-up 1
start-up 2
start-up 3
shared meeting rooms

permanent offices
company 1
company 2
private meetings rooms

11

typical layout
project based expansion

Incubator
- flex offices
- start-up 1
- start-up 2
- start-up 3
- shared meeting rooms

permanent offices
- company 1
- company 2
- private meetings rooms

company 1 expands into incubator

project collaboration with Busan Office
during slower times less office space is needed

company 1 has a restructuring period
Flexibility in section

Permanent Offices

Incubator
residential towers
Apartment Profiling.

Studio apartment 50-75 m²

The Seoulian - Blog Girl
24 yr-old Katherine has returned to her motherland after attending university in Philadelphia for the past 4 years. She is the older of two daughters and comes from an upper class family who don’t like to show it. Father is traditionally stern but understands the progression in culture and regards education as the primary focus for his daughters. His frustration from not having any sons has resulted in a strict upbringing. So naturally the freedom in the states has returned her with an edgy rebellious attitude and

She is currently working retail while she looks for a real job but is as is the culture in Korea finding upper level positions worthy of a double major for women is proving to be difficult.

And writing a blog where-in she describes her extra curricular activities and tags her fotos with the brands of clothing she is wearing rather than

On my desk today: a lot of things! The news is that I am flying back to my motherland after graduating from 4 years of so-called hell. It’s been an roller coaster ride with ups and downs here and there, a brief romance or two, and dramas that drove me crazy yet might miss looking back 4-5 years from now. With less than a week left in my winter break and my last semester approaching ahead of me, I am doing some research to what I shall do as I land in Seoul this summer. I love the gratifying feeling that comes with each graduations, but I am always nerve-wrecked with all the life-changing decisions I have to make every four years. I hope I’m not the only one who feels that way.

Anyhow, I have about 5 months left here in Philadelphia and it has already been an exciting 2 and a half years here trying to make friends with strangers and fit into some-what of a life style that I was totally foreign to. So with the time left I have here, I want to do a lot of sharing of my newly adapted Philadelphian life through series of photos while I say my good-bye’s and prepare for all the hello’s and how have you been’s. Hope you like that idea :)

p.s. There’s a huge bug going around here and I am loading vitamin C in my system through endless consumption of orange juice and clementines! Special thanks to my friend Jenny for the lovely venti-cup!
Flexible Floorplan

affordable
- studio 30--45 m²
- 1 bedroom 45-60 m²
- 2 bedroom 60-80 m²
- 3 bedroom 80-100 m²
- 4 bedroom 100-125 m²
- suite 125+ m²

luxury
- studio 50-75 m²
- 1 bedroom 75-90 m²
- 2 bedroom 90-135 m²
- 3 bedroom 135-150 m²
- suite 150-175 m²
- penthouse 175+ m²
Structural Freedom

solar optimization

Precast slabs w/core and columns
Adaptability

corner room works as flex space to adapt to the users needs
Typical Layouts
Façade requirements

Decentralized System

Modular

Passive & Mechanical Climate Control

Uniform Aesthetic

Flexible: Match Floorplan

Flexible: Sustainable Over Time
Update with Technology
Reference Projects

Low2No: REX

Capricorn: Gatermann-Schossig

Smartbox: Cepezed

E2 Facade: Schüco
Decentralized Climate Control

Smartbox System
Compact Solution

Reduced Floor Heights

Closed Aluminum Panels in front of core to reduce Glazing and increase energy efficiency.

1.5 m grid is used in a modular system to ensure sustainability and flexibility over time so that the building can be updated with new technologies as they develop.

Powder-Coated smooths transition between panels

Reduced Facade

Modular + Decentralized

Easy Maintenance
Highly Accessible

Reduced Floor Heights

Reduced Facade $$
Passive Climate Control:

- Operable Windows
- Sun Shading Blinds
- Solar Frit
- Solar Frit
- Natural Ventilation
- Photovoltaics
Mechanical Climate Control:

Smartbox

Fresh Warm Air

two Fans, in and out, and heat exchanger

Waste Air

Fans have directional flows for different air types

Fresh Air Supply

Summer

Winter

Coanda Effect

Downward to cool facade
Flexible Floorplan

Fold-out Elevation Tower 2 core is located in the north corner of the tower.

core behind close panels

gradient of colored panels to blend open glazing with closed panels
Future Flexible of Program

Residential

Office
The Korean Urban Block
Happy 4th of July!!