Urban Intervention in Hong Kong

Generic Environments as the Response to the Need of Changeability in Architecture

Delft School of Design Architecture Thinking
Content

1] Theoretical background
   Changeability
   Generality

2] Hong Kong
   Identity
   Density

3] Site Analysis
   Central Hong Kong
   Official plan for Kai Tak
   My proposal for urban intervention

4] Design
   Defining abstract model
   Development of project
   Final design
   Technical Solutions
Fascination: How Can Architecture Address Changes

top left: cement factory --> villa & design studio; Ricardo Bofill; Barcelona (1975)
top middle: seed silo --> dwellings; MVRDV; Copenhagen (2005)
top right: church --> book-store; Merkx + Girod; Maastricht (2007)
bottom: greenhouse --> caravan storage; Schiedam
Sameness
Fragments Of Continuous Monument

Superstudio - Continuous Monument (1969)
Rem Koolhaas:

“Traditional city is occupied by rules and codes of behavior. But generic city is free of established patterns and expectations.”

Everything is defined by function and nothing by history.

painting: Gustave Caillebotte - Paris Street, Rainy Day (1877)

Interview with Koolhaas (2011); http://www.spiegel.de/international/zeitgeist/0,1518,803798,00.html
Grid

Madeleine Vriesendorp - The City of the Captive Globe (1972)
left image: Madeleine Vriesendorp - Eating oysters with boxing gloves, naked, on the 9th floor
Typical Plan
Lobotomized Architecture
Marc Augé:

Airports, stations, shopping malls, hotel rooms,... do not hold enough significance to be regarded as “places.” They are could be rather described as “non-places.”

Lineu Castello - Rethinking the Meaning of Place (2010)
Francois Ascher:
Stations, airports, hotel rooms, etc. are not “non-spaces,” but rather a complex spaces, an established intersection, a zone where functions and uses can be recovered, an ambiguous space.
Potential Of Change

Brian Massumi: Football is not about the ball or the players, nor about the field or rules. It is about the game itself; about the potential of a change of the movement embedded in the ball and the players in every moment of the game.

Utopian Megastractures

Kenzo Tange - Plan for Tokyo (1960)
Proposal: Permastructure

bottom: Le Corbusier - Plan Obus for Algiers (1933)
Proposal: Connected Structures
Hong Kong

Identity?

Asia’s World City

[Map of China with a focus on Hong Kong]
Networks

Hong Kong airport:
3rd busiest in the region (by number of passengers in 2011)
11th busiest in the world

map of air traffic routes based on http://openflights.org/data.html
Pearl River Delta

- Guangzhou: 11.7m
- Dongguan: 6.4m
- Shenzhen: 8.9m
- Huizhou: 3.9m
- Zhaoqing: 3.9m (population)
- Foshan: 5.4m
- Zhuhai: 1.5m
Structure Of Employment
in private sector (2010 est.)

- 93% - services
- 41.7% - wholesale and retail trade, restaurants, and hotels
- 17% - community and social services
- 6.3% - transport and communications
- 12% - financing, insurance, and real estate
- 4.7% - manufacturing
- 2.2% - construction
- 0% - agriculture

7% - industry

Density

based on Bertaud (2007); http://sapiens.revues.org/914
Image Of Density
Transport-related energy consumption [Gigajoules per capita and year]

Value Of Density

Urban density [inhabitants per hectare]

based on Newman and Kensworthy (1989) and actualized data from Atlas Environement du Monde Diplomatique (2007);
http://sapiens.revues.org/914
Land Density

(2010 est.)

population: 7,061,200
area: 1,104 km²

density: 6,540 p/km²

based on data from: http://en.wikipedia.org/wiki/Hong_Kong
Urban Density

nature (hills): 66.8 %
(46 % parks)
built up area: 23.7 %
barren land: 0.6 %
water bodies: 2.7 %
agriculture: 6.1 %
density: ca 30,000 p/km²

data: Carrie Lam; map: York Y. N. Chow; both from conference on Cities, Health and Well-Being (2011)
Density In Districts
(2006 est.)

Sham Shui Po
population: 365 540
area: 9,4 km²
density: 54 530 p/km²

Yau Tsim Mong
population: 280 548
area: 7 km²
density: 40 136 p/km²

Wan Chai
population: 155 196
area: 9,8 km²
density: 15 788 p/km²

Local Density

Mong Kok 130 000 p/km$^2$

based on data from http://en.wikipedia.org/wiki/Mong_Kok
City of sorrow

This week’s murder-suicide is the latest chapter in a community’s tale of hardship, writes Sherry Lee.
Unsettling High-Density Development
The Site
Site Analysis: Distribution Of Functions

- residential
- public (education, health,...)
- offices
- industrial
Nodes And Relations Between Them
Existing Public Transport
Today's accessibility: 110 - 115 minutes
Official Plan For Public Transport
Accessibility In Official Plan

official plan accessibility: 80 - 85 minutes
My Proposal
My Proposal: Density
My Proposal: New Nodes And Relations Between Them
My Proposal: Public Transport
My Proposal: Nodes of interface
Accessibility In My Proposal

my proposal accessibility: 70 - 75 minutes
Preliminary Design
Habitation Model: Living Space Per Capita [m$^2$]

- **Hong Kong** 12,8 m$^2$
- **Paris** 34,9 m$^2$
- **Atlanta** 86,0 m$^2$

- **Hong Kong 2001** 10,7 m$^2$
- **Hong Kong 2011** 12,8 m$^2$
- **Hong Kong 2050** 26.0 m$^2$

= growth of 20 % in 10 years
Habitation Model: Proposal

Contemporary Hong Kong
- Living Space per Capita: 12.8 m²
- Average Household: 2.9

Proposal
- Living Space per Capita: 29.6 m²
- Average Household: 2.7

Reality
- Living Space per Capita: approx 40 m²
- Average Household: 2.7
Blocks Analysis

Amsterdam De Pijp

Amsterdam Grachten

Amsterdam Vondelpark

Barcelona Barceloneta

Barcelona Eixample

Barcelona Gracia

Berlin Hackesche Hofe

Berlin Chamissoplatz

Hong Kong Mong Kok

Hong Kong Jordan

New York Midtown

New York Upper East Side
Searching For Densest Block Type
**FSI Comparison**

**Gross Floor Area [m²] Of Grids Applied on Kai Tak Site**

**Number Of People Living In Applied Grids (Proposed Standards), 100 % Of The Structure = Housing**
Habitation Model: Urban Functions

KM3

- **Energy**: 22.73%
- **Waste**: 0.03%
- **Leisure**: 38.19%
- **Shopping**: 1.49%
- **Industry**: 8.18%
- **Parking**: 2.38%
- **Health Care**: 0.43%
- **Education**: 2.67%
- **Office**: 1.29%
- **Housing**: 22.62%

Proposal

- **Energy**: 0.89%
- **Waste**: 0.02%
- **Leisure**: 26.19%
- **Shopping**: 5.99%
- **Industry**: 3.29%
- **Parking**: 2.99%
- **Health Care**: 0.20%
- **Education**: 5.05%
- **Office**: 6.11%
- **Housing**: 49.26%
Blocks In Proportion For Demanded Density
First Designs - Structural Grid And Typical Units
First Designs: Blocks And Elements Of Blocks

- $11 \times 4 = 44$ m
- $7 \times 4 = 28$ m
- $9 \times 4 = 36$ m
- $5 \times 4 = 20$ m
- $20 + 2 + 2 = 24$ m
- $4 \times 4 = 16$ m
First Designs: Adapted Blocks
First Designs: Combinations of Block Elements
First Designs: Combinations of Block Elements
### Simplified Program

**New Proposal**

<table>
<thead>
<tr>
<th>Category</th>
<th>Percentage</th>
<th>Details</th>
<th>Area (m²)</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Housing</strong></td>
<td>30%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 floors</td>
<td></td>
<td>parking</td>
<td>29,000 m²</td>
<td>5.3%</td>
</tr>
<tr>
<td>2 floors</td>
<td></td>
<td>shopping</td>
<td>58,500 m²</td>
<td>10.7%</td>
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<tr>
<td></td>
<td></td>
<td>basemenet</td>
<td>87,500 m²</td>
<td>16%</td>
</tr>
<tr>
<td><strong>Office</strong></td>
<td>22%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3 floors</td>
<td></td>
<td>shopping</td>
<td>88,000 m²</td>
<td>16%</td>
</tr>
<tr>
<td>3 floors</td>
<td></td>
<td>leisure</td>
<td>88,000 m²</td>
<td>16%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>basement + plinth</td>
<td>263,500 m²</td>
<td>48%</td>
</tr>
<tr>
<td><strong>Leisure</strong></td>
<td>16%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>offices</td>
<td>121,000 m²</td>
<td>22%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>housing</td>
<td>165,000 m²</td>
<td>30%</td>
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<tr>
<td></td>
<td></td>
<td>total</td>
<td>550,000 m²</td>
<td>100%</td>
</tr>
<tr>
<td><strong>Shopping</strong></td>
<td>26.7%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 floors</td>
<td></td>
<td>parking</td>
<td>+29,000 m²</td>
<td></td>
</tr>
<tr>
<td><strong>Parking</strong></td>
<td>5.3%</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Final Design: Core And Wings Scheme For Tower

Wings with apartments

Loadbearing core with vertical communications

Wings with apartments
Final Design: Towers Connected By Bridges
Two Connected Towers
Searching For Block From Connected Towers
Searching For Effective Organisation Of Blocks
Final Design: Five Connected Towers Form Block

- 25 residential floors
- 10 floors of offices
Final Design: Podium

- 3 floors of leisure
- 3 commercial floors
- 2 commercial floors
- 2 floors of parking

Dimensions:
- 236 m
- 124 m
Final Design: Four Blocks On Podium Form Superblock
Repeating Superblock On Site
Applying Superblock On Site
Non-Standard Superblocks
Alternations Of Typical Superblock
Final Design

Density - aprox. 60 000 p/km²
Lightening The Structure Public Spaces
Public Podium Rooftop
Podium: Groundfloor
Podium: First Floor
Podium: First Underground Floor (Supplies)
Podium: Lower Underground Floor (Parking)
Typical Office Floor
Residential Floor Where Bridges Swap Positions
Four Basic Types Of Units

1-Bedroom

Studios

3-Bedrooms (Duplex)

2-Bedrooms
Technical Solution: Simplified Static Scheme
Constructive System: Loadbearing Core
Constructive System: Extended Core
Constructive System: Cantilevered Beams
Constructive System: Columns Redistributing Loads
Constructive System: Connection To Other Segment
Typical Details
Applied Facade System (Floorplan)
Direct Sunlight On 21st June

AM

PM

AM

PM

AM

PM
Direct Sunlight On 21st April And 23rd September

AM

PM

AM

PM

AM

PM
Direct Sunlight On 21st December
Natural Light And Ventilation
Room For Ventilation Ducts
Ventilation Shafts
Ventilation Shafts
Ventilation Intake And Exhaustion
Thank you!