LEARNING BY DOING
IN CUBAN URBAN IDYLL

MSC3-4 COMPLEX PROJECT | HAVANA | ALAMAR
P5 PRESENTATION | 06-07-2017

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A NEW CITY
What’s Alamar?
METHODOLOGY AND ASSIGNMENT

Urban layers
- Politics
- Economy
- Morphology
- Urban Position
- Culture
- Society

Research Proposal

Architectural Design

A manifest from the research

Research → Proposal
A city for Alamar people
Bottom-up spontaneous
INTERVENTIONS

INTANGIBLE

TANGIBLE

ORGANOPÓNICOS

FOOD TRADING KNOWLEDGE

AGRICULTURAL KNOWLEDGE

LOCAL CRAFTS

REUSABLE MATERIALS

DURABLE MATERIALS

FOOD MARKET

ORGANOMATICS

MARKET

Elderly care

Social ALAMAR PEOPLE living

ARTISTIC PERFORMANCES

VOLUNTEERS

RODUCTION/REUSE

LOCAL CRAFTS

MARKE

SOCIAL SECURITY

REUSABLE MATERIALS

AGRICULTURAL KNOWLEDGE
Urban agriculture and the wild greenery create a different living quality to Alamar. From the perspective of bottom-up, using local identity and resources are the representation of the manifesto as a future-oriented approach.
The project is right aiming to create a prototype of educating younger generation exploring value out of their own hands from the earth.
We are going to demonstrate what real socialist agriculture is.

– Fidel Castro
Sugarcane
Propaganda
Organic Urban
'Low-tech'

'High-tech'
With the remarkable achievements, urban agriculture in Cuba becomes a multi-dimensional profitable sector. The area is especially shaped by the agriculture landscape and natural landscape, becoming its identity which is different from the city of Havana.
CURRENT DILEMMA
LACK OF EFFICIENT MATERIAL SUPPORT

The support of knowledge is hardly transformed to the UA practice due to the poor materials. There are seldom good tools in the store.
Hard working condition, high-educated level and non-relationship with ‘new things’ push most of the younger generation far away from the farmland. Half of the agricultural population is actually researchers and managers.
There are a lot of potentials for the future.
Privatisation will be gradually realised in Cuba, which suggest a possibility of transforming the state-owned agricultural enterprises into small scale, eco-friendly, private-owned ‘fincas’ to improve the yield.
Instead of traditional large-scale soviet farmland, the decentralisation of agriculture is also the direction of future development, for example, the popularisation of urban and suburban agriculture. Reuse the abandoned lands or exploiting the suburban areas are both options for the next step.
The innovations from the farmers are naturally given the patents and protected by laws, sometimes popularising by the publications. Farmers are literally the protagonists on the stage. Cuban Government encourages bottom-up innovations and categorises 200 items into one publication, including agriculture, stock farming, water resource, rebewavke energy and even agricultural architecture.
Individual Renovation

Collective Reuse
THREE DETACHMENTS

Garden
- Basic Education
  - Attraction
  - Interests
  - Outcomes

Starters
- Skills
- Tools
- Mentility

Community
- Consultation
- Visual Connection
- Service

Market & Products

Youth

Consultation
Visual Connection
Service
RESEARCH QUESTION

How to spread the knowledge of organic urban farming to the younger generation in order to ensure the continuity of the benefits and profits it has brought to the people and country?
The success depends on the intelligence with which we act on.

— Raul Castro
The three functions are the three hinges to connect the detachments from physical perspective. Pass the knowledge and mentality to the next generation.
Rather than point to point support and training, the school will provide a series and integrated subjects, and also regular and stable.
With the upcoming process of privatisation and the open of labour market, the vocational education will gain a huge opportunity, especially the organic urban farming sector, which is profitable for multi-dimensions.
The traditional agronomic school were mostly before the special period, which means the architectural language was mean to apply the traditional study and practice with heavy agricultural machines.
Practice

Local Skill
How can the vocational school locate itself within Alamar?
The school should be well connected by public transportation within Alamar and its neighbourhood.
LOCATING
URBAN CATALYST

The school should balance a little bit within the unbalanced eastern part, ‘Siberia’.
Organiponicos Vivero

‘Pioneer’ of UA Economy

Centre of craftsmanship

Future City Centre

Future Development

Textile Centre

UA Vocational school

Education Hub

Computer University

High-tech
FUNCTIONAL COMPOSITION

Service: 1068 sqm
Classroom: 1002 sqm
Workshop: 2511 sqm
Parking & Storage: 4640 sqm
Total: 9221 sqm

FUNCTIONAL COMPOSITION

Workshop: 4512 sqm
Classroom: 1855 sqm
Recreation: 951 sqm
Service: 918 sqm
Total: 8235 sqm

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Recreation: 951 sqm
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Total: 8235 sqm
Generally, the practical teaching space can be summarised as workshop with material, administration, logistic and demonstration spaces. The workshop will occupy half of the school as the backstage and the spatial climax. However, the proportion should be reconsidered due to the specialisation.
PROJECT PRESET
PARTITION AND REFLECTION

Agricultural Landscape Park

Agronomic Workshop | 1500m²

By-product Processing Workshop | 1500m²

Installation Workshop | 1500m²

Normal classroom and meeting rooms | 1800m²

Logistics and Supportive Services (including library, canteen etc.) | 2700m²

Community Helpdesk | 250m²

Product Selling Service | 200m²

Square | Canopy Space | 1500m²

Start-up center | 350m²

Recreation | 450 m²

Gym | 500 m²
How to make the overlapped partitions into a entity and make the school more flexible and coherent with agriculture?
REFLECTION
INTEGRITY FLEXIBILITY AND MOBILITY
Over-wide corridor

Multi-functional logia
REFLECTION
MAXIMISE SOCIAL EFFICIENCY
REFLECTION
JOINT-USED PUBLIC FACILITIES

WEEKDAYS

| CANTEEN | CAFE | HELPDESK | LIBRARY | GYM | LECTURE ROOM COMMUNAL TRAINING |

| 8 10 12 14 16 18 20 22 |

SCHOOL TIME

| CANTEEN CAFE | HELPDESK | LIBRARY | GYM | LECTURE ROOM COMMUNAL TRAINING |

| 8 10 12 14 16 18 20 22 |
REFLECTION
REORGANISATION AND OPTIMISING

50% Workshop

20% Classroom

30% Recreation Logistic

15% Flexible Learning Landscape

35% Specific Workshop

15% Classroom

30% Recreation Logistic
As to re-cultivate the abandoned farmland in Cuba (30%), there will be 4% more population taking part into the direct agricultural activities. Alamar is a community owning 25% juveniles and 6,300 high school students. Within the area, there’s only one regular high school. Taking 4% out of the area as the assumption.
<table>
<thead>
<tr>
<th>Area</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Learning landscape</td>
<td>17.5%</td>
</tr>
<tr>
<td>Common learning area</td>
<td>250X2=500 sqm</td>
</tr>
<tr>
<td>Auditorium</td>
<td>Central Courtyard</td>
</tr>
<tr>
<td>Corridor (Semi-open)</td>
<td>1250sqm (50%)</td>
</tr>
<tr>
<td>In total 1770 sqm</td>
<td></td>
</tr>
<tr>
<td>Practical Education Sector</td>
<td>31%</td>
</tr>
<tr>
<td>Practice Space</td>
<td></td>
</tr>
<tr>
<td>Agronomic Workshop (self-working</td>
<td>semi-open)</td>
</tr>
<tr>
<td>Seedling</td>
<td>400 sqm</td>
</tr>
<tr>
<td>By-product Processing Workshop</td>
<td>300+4X100=700 sqm</td>
</tr>
<tr>
<td>Installation Workshop</td>
<td>300+4X100=700 sqm</td>
</tr>
<tr>
<td>In total 3150 sqm</td>
<td></td>
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<tr>
<td>Theoretical Education Sector</td>
<td>13.7%</td>
</tr>
<tr>
<td>Regular Learning Space</td>
<td></td>
</tr>
<tr>
<td>Classroom</td>
<td>50X5=250 sqm</td>
</tr>
<tr>
<td>Shared-use Lecture room</td>
<td>4X100= 400 sqm</td>
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<tr>
<td>Individual Space</td>
<td></td>
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<tr>
<td>Self-learning</td>
<td>250 sqm</td>
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<tr>
<td>Library</td>
<td>500 sqm</td>
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<tr>
<td>In total 1400 sqm</td>
<td></td>
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<tr>
<td>Logistic, Administration and circulation</td>
<td>25.5%</td>
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<tr>
<td>Logistics</td>
<td></td>
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<tr>
<td>Administration</td>
<td>450 sqm</td>
</tr>
<tr>
<td>Workshop Support</td>
<td>450 sqm</td>
</tr>
<tr>
<td>Storage</td>
<td>400 sqm</td>
</tr>
<tr>
<td>Equipment</td>
<td>400 sqm</td>
</tr>
<tr>
<td>Personal storage</td>
<td>150 sqm</td>
</tr>
<tr>
<td>In total 10170 sqm</td>
<td></td>
</tr>
<tr>
<td>External Service Sector</td>
<td>12.3%</td>
</tr>
<tr>
<td>Communal Helpdesk</td>
<td></td>
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<tr>
<td>Helpdesk for consultation</td>
<td>250 sqm</td>
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<tr>
<td>Communal Corner</td>
<td>150 sqm</td>
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<tr>
<td>Youth Center</td>
<td></td>
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<tr>
<td>Gymnastic</td>
<td>500 sqm</td>
</tr>
<tr>
<td>Cafe (Also for the students)</td>
<td>350 sqm</td>
</tr>
<tr>
<td>In total 1250sqm</td>
<td></td>
</tr>
<tr>
<td>In total</td>
<td>10170 sqm</td>
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</tbody>
</table>
04 THE DESIGN

How to translate into architecture?
NEIGHBOURHOOD ANALYSIS
THREE ‘FACADES’
FARMLAND-BASED FORM
Invite the farmland spontaneously going into the school.
URBAN PLAN

DEFINED BORDER AND COMPLETE URBAN SURFACE
FUTURE SCENARIO
A CATALYST FOR SURROUNDINGS

1 Demonstration Farmland | Veviro
2 Community Farmlands
3 City Centre
4 Ecological Agriculture Park
5 Private Farmlands
A City Centre Complex
B Community Handcraft Center
C Reserved Construction Site
D Reserved Construction Site
E Reserved Construction Site
F Reserved Construction Site
CANOPY-DEFINED FIELD
CONTINUITY AND SPATIAL IMPLICATION
CANOPY-DEFINED FIELD
CONTINUITY AND SPATIAL IMPLICATION
SITE PLAN
A CANOPY-DEFINED SPACE
URBAN IMPLEMENTATION PLAN
A WORKSHOP-DEFINED BLOCK BORDER
URBAN CONDITION
BETWEEN THE FARMLAND AND THE CITY
As to make the loop dynamic, it consists different layers.
A MULTI-LAYER LOOP

As to make the loop dynamic, it consists different layers.
Along the tour, there are different activities organised and happening inside.
HORIZONTAL SECTIONS

Ending Point

Farmland

Central Yard

Front Gate
CENTRAL YARD
MULTI-FUNCTIONAL HEART
CENTRAL YARD
MULTI-FUNCTIONAL HEART
STRUCTURE PRINCIPLE
HYBRID OF HEAVY CONCRETE AND LIGHT STEEL

The loadbearing structure system consists of concrete structure and steel structure (including the canopy and long-span trusses). Two systems are combined with built-in fitting elements. Both materials are local in Alamar, representing the social housing and small sheds.
STRUCTURE PRINCIPLE
CONCRETE CORES
STRUCTURE PRINCIPLE
CAST IN-SITU CONCRETE FRAME | STEEL FRAME
STRUCTURE PRINCIPLE
CLIMBING STEEL STRUCTURE
STRUCTURE PRINCIPLE
PRE-CAST SLABS
STRUCTURE PRINCIPLE
CANOPY STRUCTURE
The structure also responds to the existing approach of using concrete elements for plantation.
PRECAST CULTIVATABLE ELEMENTS
RIBBED CONCRETE SLAB

 Depth, sound insulation and structural height reduction.
PRECAST CULTIVATABLE ELEMENTS
RIBBED CONCRETE SLAB

*Depth, sound insulation and structural height reduction.*
A school as sustainable pioneer
South facade | Horizontal sun-shading
West and east facades | Vertical sun-shading
Roof | Complete thermal insulation (not necessary with insulation materials)
Good natural (passive) ventilation
DIFFERENT APPROACHES
For cultivation
less thermal insulation
more open air
sun-shading

For education
more thermal insulation
less open air
sun-shading

Different inner skin
same shutter skin

Multi-wall policarbonate sheet
Thermal insulation as high as
R1.42 for standard range
Reduction of sun ray heat by up to 60%
Completely recyclable

Bamboo blinds
Appropriate sunshading
Let air go through
Renewable material
Demonstrative and lead in tendency
Cuba owns the richest species of bamboo in Caribbean area. Although the native species are not economically valuable because of the thickness, the Guadua bamboo has been introduced to the island for a long time. It grows fast and even on site.
CASCADE BAMBOO FACADE
FOLDING FACADE | ALTERNATIVE SHADING

Hot Summer
Visual Connection

No Visual Connection

Warm ‘Winter’
Visual connection
RAINFALL

Average Temperature

Precipitation
VENTILATION | ATRIUM
How does the different combination of materials shape different environment?
MATERIALIZATION
INDOOR WORKSHOPS
MATERIALIZATION
INDOOR WORKSHOPS
MATERIALIZATION
AGRONOMIC WORKSHOPS
LANDSCAPE AND BUILDING
LANDSCAPE AND BUILDING
"One day we'll have to build a monument to the 'special period' because it has forced us to find truly sustainable ways to meet our food, energy and health care needs."

– Rosa Elena Simeyn, Minister of the Cuban Ministry of Science, Technology and the Environment, 1994 – 2004
The school is like a toolbox to equip the younger generation with a creative mind of creating a valuable and sustainable business, as well as a catalyst to activate the surroundings to let green flow into daily life.