RECONCILING TOWNSCAPES

Final Design
a proposal to reshape the abandoned factory village in the outskirts of Lisbon, to a new configuration of public space

the design of a new opportunity educational centre
I. Introduction 7
II. Photo collection 9
III. Urban intervention 25
IV. Building intervention
The MMC site
The Manutenção Militar Complex (MMC) was an industrial facility that produced food, uniforms and other goods for the Portuguese Army. The first bakery was accommodated in a former Convent – Convento das Grilas – by the end of the 19th Century. During the 20th Century, due to the needs during the First World War and the Portuguese Colonial War in the 1960s, the complex was expanded. Whilst the Portuguese Army reached 200,000 men in the 1960s, it is now reduced to 20,000 active soldiers. Gradually the factories closed and Manutenção Militar was finally substituted by a public enterprise MM-Gestão Partilhada in 2015. The termination of the industrial production raised the problem of finding new sustainable uses for this area on the Tagus riverfront, between the Pombaline City Harbour – Terreiro do Paço – and the Contemporary Parque das Nações. This is a challenging task: any future solution needs to have a dialogue with this current industrial heritage, which is deeply connected with recent Portuguese history, as well as with the Lisbon riverside area and the contemporary city.

I. Introduction
Lisbon, Gulbenkian Park
II. Photo collection

During my trip to Lisbon I made photos from the site, the city and the people. The ones that intrigued me the most, are shown in this chapter. The pictures capture a certain problem or a specific quality that I experienced, which influenced my design position.
Lisbon, Gulbenkian Park
Lisbon, Beato
Lisbon, Beato
Lisbon, Beato, Industrial site MMC
How can an industrial site be reshaped to create an urban environment, where people feel inspired to stay, and that helps to revive and re-activate the area?
The industrial site is re-shaped to generate meandered movement through sequences of intimate & open spaces
III Urban intervention

The re-development of the MMC site is focused on improving the urban situation for the local residents, both functional and spatial. Many of them belong to the category disadvantaged people in terms of education and employment. The new pedestrian lane through the middle of the site, bridges the two local village centers and gives the opportunity to grow one stronger center, with a functional division of a commercial, educational and flexible zone. In the educational center, every building facilitates multiple extra curricular activities that focus on listening, presenting, reading and learning by nature, in groups, by making and playing.
1. Local center of Beato

2. Main street; Rua de Grillo

3. Monotonous industrial site
4. Low quality educational institutions

5. Insufficient use of space

6. Lack of collective urban space

7. Most buildings are too dark to get sufficient daylight
The visible structure in the facade is typical of Modern Movement.

Young addition, bad quality storage shed.

The round shape at the front is part of main street, only the triangular shape makes this building particular.

Only water tower on the site, has one brother in Beato.

Young addition, bad quality, but explains its function clear in MMC.

Building had one of the first electricity generators of Portugal.

Building had one of the first electricity generators of Portugal.

Particular mixture between traditional and Modern Movement, facades are changed later.

The Convent building is iconic for the start of the MMC period.

Young additions, bad quality and no clear function within MMC.

This is a small addition for the Convent building.

Only the diagonal line is a trace from the Portuguese discovery period and the old waterline.

The Supermarket building was used from the discovery period until 1990, the fact that the building is cut is valuable, not the wall itself.

The gate is a trace of the Military State of Salazar.

Young addition, bad quality and no clear function within area.

The shed and the wall are traces from the Portuguese discovery period.

- high transformation potential / limited historical value
- medium transformation potential
- limited transformation potential / high historical value

Transformation potential map.
The building acts more as a wall than the wall itself.

Traditional storage buildings
one of the first buildings in MMC

Mixture between traditional, industrial and Modern Movement buildings

A particular mixture between traditions and Modern Movement, one of the first buildings in MMC

The semi-open facade is shaped by the machines

The rest of the facade is only the visible structure typical Modern Movement

Young addition, bad quality and no clear function within MMC

A particular mixture between traditions and Modern Movement

The silo are the icon for the latest additions within MMC, typical Modern Movement

Young building, bad quality and no valuable function within MMC

The outer facades have many layers, structure is particular, roofs are changed
The Grillas warehouse was built in the 16th century as part of the Grillas convent, where goods from the fields were stored to be transported by ship. Today, the presence of water is hard to find, the new coastline has moved hundreds of meters. The element of water facilitates thereof intangible memories to its historical development.

value weight ++++

In the 20th century, the Grillas warehouse became part of a large industrial complex producing maintenance goods for the Portuguese army. The warehouse, as part of the social factory complex, facilitates thereof intangible memories as a place of work, care and development.

value weight +++

nostalgic memories

The Grillo Convent, was built for monks following the order of Saint Augustine. The Augustinian Friars, seeking to bring the religious ideals of the monastic life into an urban setting, tried to spread their order with discovery travels to Africa, Asia and America. The relationship between the convent, the warehouse and the coastal wall is therefore an important spatial reminder.

value weight +++

Right next to the factories, a Portuguese village developed with houses recognizable by traditional building principles & crafts with stone, colours and tiles. These local crafts were also used to decorate interiors of the factories, and are thus very important within the wider cultural context and identity.

value weight +++

culture & traditions

Cultural & Historical values from the MMC site
The arches, are presumably the oldest building elements on the factory site. The shape of the interior construction elements refer to the historical convents and palaces in the area. Although the arches are built pragmatic, their sequence emphasizes spatial experience of perspective.

value weight ++++

The roof is carried by a 13.5 m. wide wooden truss, which was for the time being constructed, a challenging and innovative gesture. Presumably is the roof structure added during industrialization, when more space was needed for storing large industrial products.

value weight ++++

The original walls are constructed from locally found limestone species with a thickness of 1.5 m. During its life, several openings are made within these walls, with fairly unstructured relationships, which are particularly visible in the front facade. The thickness and the irregular wall openings are therefore an important feature of transformation and age.

value weight ++++

In 1974, the year of Portuguese Carnation revolution and the ending of the war in Africa, the adaptation of the MM’s activity was inevitable. The warehouse was transformed into a large supermarket. Walls were opened, plastered and tiled with a fresh blue color. The blue tiles and the large openings facilitate therefore spatial recall.

value weight ++++

overlapping time-layers
Transformation assumptions

- Use factory interiors to create a network of intimate public interiors.
- Emphasize high historical values, balance between heritage and new user value.
- Let a new layer create a composition of old and new.
Development plan
a. integration of the industrial facade

b. a secret view
The industrial site is spatially manipulated, to make pedestrian routing both fluent and tactile. Therefore, interiors of factories are used to create more intimate urban space, so that a network of spatial sequences arises. In these urban interiors, industrial materialization and structures are emphasized with green, light and shadows, creating interesting entrance zones and short-cuts where people become more aware of the historical time-layers and values.
c. industrial courtyard
d. the pedestrian lane
The site before and after the intervention
New Opportunities Educational Centre

**LEARN & WORK**
1. library
2. workspaces
3. auditorium theatre
4. outdoor education
5. opportunity centre
6. learning by nature pavilion

**ECOLOGY**
7. urban ecology centre (maintenance + education)
8. water purification filter & heat cold storage
9. soil purification garden
10. vegetable garden

**CRAFT**
11. wood workshop
12. earthenware workshop

**OTHER**
13. cantina
14. playground
15. watch tower
exposing characteristic historical development to generate inspiring learning environments
Valuable historical elements & the organization of public spaces
View from warehouses to the silo building
Building transformation according to the historical values and the new user values
Building transformation according to the historical values and the new user values.
View from the cantina (silo) to the grillas warehouse and pavilion
View from the cantina (silo) to the grillas warehouse and pavilion
View from the cantina (silo) to the grillas warehouse, the watchtower and the urban ecology center (silo)
View from the grillas pavilion to the ecology center (silo) and the craft workshops (warehouses)
View from the grillas pavilion to the ecology center (silo) and the craft workshops (warehouses)
The industrial building is transformed to create inspiring and healthy learning environments for the new opportunity education centre.
IV Building intervention

The Grillas Warehouse is the main building of the New Opportunity Education Centre, which is also further elaborated. As the new function of the warehouse will be an educational institution, the warehouse needs to be transformed in order to get sufficient daylight and to become more environmental friendly. Besides, different educational program needs to be added like an auditorium theatre, workshops and a reception space.

High historical values of the Grillas Warehouse; the old waterfront wall, the shipyard sheds, the arches and the 1.2 meters thick natural stone walls; are leading the intervention. On the other side, for the new usage it was important to facilitate a connection from the main village street, to the lower situated industrial site.
low historical value

removing parts with low historical value
exposing religion & discovery elements
The space in front of the convent and the old waterfront wall, a calming green space is re-generating the historical connection from the Grillas convent with the Grillas warehouse. A new pavilion provides shade and intimate learning spaces surrounded by nature. The pavilion takes into account the rhythm and the expansiveness of the surrounded warehouses. By its position right across the new pedestrian lane, it acts like a transition border from the village to the industrial site.
Each building has valuable traces of overlapping time-layers
Each building has valuable traces of overlapping time-layers

Expressing overlapping time-layers in a subtle way
Grillas Warehouse front facade
A clear new building layer is added to generate a more coherent townscape and to strengthen the identity of the existing buildings. The new layer follows the volumes of the old, but with the locally produced terra cotta earth bricks, the new additions experiment with different stacking patterns, sizes, openings and aggregates of shredded waste.
openings in old wall:
- prefab concrete lintels
- for large openings parts need to be reconstructed from original stones

roof structure:
- old trusses will be reinforced with 4 new tension cables on each side
- a new secondary wood structure (h.t.h. 5100 mm)
- the new part is constructed from CLT trusses (h.t.h. 13500 mm)

new wall structure:
- single brick cavity wall with cross battens each 1700 mm.

Structure of the Grillas Warehouse
The Grillas Warehouse - ground floor

1. courtyard with consult places
2. foyer: bar, wardrobe & entrance desk
3. library
4. services: toilets, dressingrooms & shower
5. auditorium-theatre: presentation
6. terrace
7. storage & climat control
8. working / learning places
9. group workshop

first floor
01 - Isolated rain pipe, r = 70 + 35 mm isolation
02 - Aluminium cover plate, t = 4 mm
03 - Robe coloured clay plaster finish with vertical structure, t = 25 mm
04 - Robe coloured clay plaster finish, t = 15 mm
05 - Compressed Stablized Earth Blocks, penetrated + steel tension cable galvanized 8 mm
06 - Compressed Stablized Earth Blocks, LWH = 380 x 150 x 65
07 - steel tension cable galvanized 8 mm
01 - Isolated rain pipe, \( r = 70 + 35 \text{ mm isolation} \)
02 - Aluminium cover plate, \( t = 4 \text{ mm} \)
03 - Robe coloured clay plaster finish with vertical structure, \( t = 25 \text{ mm} \)
04 - Robe coloured clay plaster finish, \( t = 15 \text{ mm} \)
05 - Compressed Stablized Earth Blocks, penetrated + steel tension cable galvanized 8 mm
06 - Compressed Stablized Earth Blocks, \( LWH = 380 \times 150 \times 65 \)
07 - steel tension cable galvanized 8 mm
01 - soft grey polished concrete with exposed aggregate of limestone, prefabricated elements
  h = 200
02 - CO2 controlled ventilation grille
03 - bright timber window profile, protected with transparent linseed oil
04 - Existing lime stone wall, t = 1450
05 - Robe coloured clay plaster finish, t = 15

Natural ventilated window openings in existing wall structure - 1:20
15,100 m³ indoor program

natural ventilation windows
36 m² east facade
18 m² north facade
13 m² west facade
29 m² south facade
92 m² roof

1 air treatment unit (1.5 x 2 m):
- toilet and showers exhaust
- auditorium theatre inlet + exhaust for high occupancy rates

(max 100 persons)
Foyer & Library
Daylight access

1300 m² indoor program

daylight
1240 m² glass roof
1240 m² white reflective ceilings (white washed wood panels)
200 m² perforated floor panels

145 m² windows
existing grillas warehouse; foyer and view to library 1:100
1a. new glass roof, aluminium wood profile
1b. new secondary timber structure (h = 300 mm)
1c. re-used terra cotta roof tiles and stripes of integrated orange-coloured solar panels
1d. multiplex roofing panel, reflective white washed
2. existing timber truss, reinforced with steel rods (c = missing)
3. new separation wall hollow (t = 900 mm)
4. integrated wardrobe
5. new concrete screed with floor heating and cooling
6. existing arch structure; 17th century stone structure: top protected with aluminium coated sheet (c = grey with white and beige dots)
7. prefabricated concrete lintel, limestone aggregate
8. bright pine wood doorframe (t = 60 mm)
9. re-built natural stone wall fragment, covered with rope-coloured scialbatura

existing grillas warehouse; foyer and view to courtyard 1:100
The learn & work spaces are illuminated with northern light and surrounded by plants.
01 - Existing lime stone wall, $t = 1100$

02 - Robe coloured clay plaster finish, $t = 15$

03 - Wood beam, $160 \times 120$

04 - Steel grated floor panels, white reflective, $t = 50$

05 - Prestressed ceramic floor elements

06 - Compressed Earth Blocks

07 - Robe colored with lime stone dust

08 - Removable planter boxes with bubble wrap

LWH = $2500 \times 360 \times 300$

09 - watertight foil

10 - Wood window profile

02 WINDOW AND GREEN IN EXISTING OPENING - COURTYARD/LIBRARY WALL 1:5

window and green in existing wall opening - courtyard and library wall 1:5
01 - Existing limestone wall, $t = 1100$
02 - Robe coloured clay plaster finish, $t = 15$
03 - Wood beam, 160 x 120
04 - Steel grated floor panels, white reflective, $t = 50$
05 - Prestressed ceramic floor elements
06 - Compressed Earth Blocks Robe colored with lime stone dust
07 - Removable planter boxes with bubble wrap $LWH = 2500 \times 360 \times 300$
08 - Watertight foil
09 - Wood window profile
10 - Plant water drainage, Lime stone element
The Grillas Warehouse Courtyard & pedestrian route from village to site
Reflection pond, underground connected with adjacent flower park, d = 500

02 - polished concrete with exposed aggregate and waste glass

03 - Compressed Earth Blocks

04 - Existing arch structure, white stucco removed, flattened with stone colored stucco mixed with marl

05 - Raised terrace sand, h = 7200

06 - CEB paving
01 - Reflection pond, underground connected with adjacent flower park, d = 500 mm
02 - Polished concrete with exposed aggregate and waste glass
03 - Compressed Earth Blocks
04 - Existing arch structure, white stucco removed, flattened with stone colored stucco mixed with marl
05 - Raised terrace sand, h = 7200
06 - CEB paving
The new attached auditorium theatre
View from the main square to the new attached auditorium theatre, with outdoor education
new grillas warehouse; auditorium theatre 1:100
1. penetrated, CSEB cavity wall (900 mm), integrated sound system, storage and insulation
2. timber doorframe \( h = 7500, w = 9400 \)
3. CLT trusses
4. bright pine wood, prefabricated operable louver frames
5. re-used terra cotta roof tiles and strokes of integrated orange colored solar panels
6. spot lighting
7. ventilation inlet
8. ventilation exhaust
9. existing wall \( w = 1050 \)
   door openings materialized with white washed multiplex (20 mm)
wall construction - auditorium roof segment 1:5
01 - Compressed Stabilized Earth Blocks, penetrated \( t = 140 \)
02 - Glasswool insulation, \( t = 130 \)
03 - Ventilated cavity, \( t = 490 \)
04 - Compressed Stabilized Earth Blocks, \( t = 140 \)
05 - Pine timber beam, protected with BSH varnish 450 x 140 mm
06 - Pine CLT truss, \( t = 150 \), span = 13.900
07 - Aluminium cover plate, terra cotta color coated, \( t = 4 \)
08 - EPDM foil
09 - Gutter wood, \( t = 30 \)
10 - Wood rafter 350 x 90, h.t.h 5500
11 - Automatic adjustable louver frame, white washed timber, 100 x 2100 x 1350
12 - Stabalux aluminium wood profile, messing coated
13 - Laminated safety glass, matte
The ‘new’ auditorium theatre, with roof integrated solar panels
building integrated solar energy
Grillas Pavilion fragment / Learnin by Nature

1. double layered pine timber shadow structure
   \( h = 400 \text{ mm}, \text{span} = 8500 \) protected with BSH varnish
2. glass roof panel, aluminium roof panel, coated \( t = \) terra cotta with red, white and brown dots
3. polished massive concrete plinth, limestone aggregate
4. sand gravel
5. CEB cavity wall, irregular pattern
6. wild flowers from Alentejo region, watered by automatic sprinkler system
1. focus places incorporated in wall
2. discussion / thinking place
3. explaining
4. staircase to main street / Grillo Church
5. wild flowers from Alentejo region
6. water purification filters & heat cold water storage
7. main pedestrian lane / Rua de Manutencao

a. 17th century coastal wall
b. 17th century shipyard sheds
c. 16th century grillas warehouse
d. 1920s MMC gate
e. 1910s railway warehouse structure
Learnin by Nature and crossing time-layers in the new pavilion
Climat control & water management

- Water storage pond:
  - 440 m² water purification plants connected to automatic gardening sprinkler system
  - 3,500,000 liter heat cold storage (comparable with 200 households)
  - 1 heat pump
  - 1300 m² floor heating/cooling
The pavilion provides seating niches that create their own shadow and are illuminated from above.
A fragment of the ‘Learning by nature’ pavilion
A fragment of the ‘Learning by nature’ pavilion
“It is the sense of depth in an old city, as a collage of time, that is so intriguing.”

K. Lynch