CULTURAL VALUES

MANUTENCAO MILITAR COMPLEX
The Milling & The Bakery
COVER IMAGE
Machines inside the Milling - own photo

SOURCES
Images throughout the paper are own images unless stated otherwise

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STUDENT
Noelle Dooper
4076486

TUTOR
Marieke Kuipers
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Image 2: Aerial view from large Silos
INTRODUCTION

The Manutenção Militar Complex (MMC) is situated along the Tagus river just outside of the city centre of Lisbon in the ‘freguesia’ of Beato. Within the industrial complex they produced food, uniforms and other goods for the Portuguese Army. Whilst the Portuguese Army reached 200,000 men in the 1960s, it is now reduced to 20,000 active soldiers. This meant that the factories of the MMC complex finally closed leaving a large industrial area that needs to be transformed for future use. The whole MMC complex can be divided into three parts but for the Graduation Studio Lisbon we focus on the southern part closest to the river. This part of the MMC contains large factories where flour was milled and large amounts of bread and pasta were produced. Besides these functions the MMC also had a social function to the neighbourhood with a local supermarket and housing for families. Within this industrial complex we need to research the cultural values of the MMC and our chosen buildings not only to understand the challenges of working with industrial heritage but also to create a transformation framework as a guideline throughout our graduation.

The graduation project started with the DOCOMOMO workshop and conference 2016 in Lisbon introducing the site to the students and simultaneously providing tons of information and a thriving first impression. Personally, during the first site visit I was overwhelmed by the immense buildings and huge industrial scale of the site, the impressive ovens of the Bakery and the vast amount of machinery. Eventually I chose the buildings in the middle of the MMC, the Milling and the Bakery, as I personally feel these are the heart of the whole complex and provide a complex design challenge combining cultural value, design and technique. These buildings ‘have it all’: a visible transformation over time, aesthetic features, large silo structures, different levels, spaces overpowered by machinery, hall-type spaces and ending with a strong landmark type. As these buildings are situated in the middle of the complex they immediately influence all the other buildings within the MMC which is why I want to use it as an incubator for the rest of the complex: starting from within. Thus the complex design challenge of the Milling and Bakery will be the subject of my graduation project starting with its cultural values. My overall focus will eventually be regarding the Milling.

Image 3: Location MMC in Lisbon 1:75.000 (Architectural Analysis Middle Group p. 32)

Image 4: Location of the Milling and Bakery within the MMC 1:10.000 (Architectural Analysis Middle Group p. 15)
There are multiple theories about the different cultural values and how we view cultural heritage. For this graduation project a new tool was designed to define the cultural values of a building or site. This tool is based on a combination of the theories of Alois Riegl and Stuart Brand. To explain the tool the theories of Riegl and Brand will very briefly be discussed. For further reading on theories of cultural value I recommend ‘Het erfgoeduniversum’ by Marlite Halbertsme and Marieke Kuipers, ‘How buildings learn’ by Stuart Brand, ‘Assessing the Values of Cultural Heritage’ a research report by The Getty Conservation Institute containing multiple essays and a PhD thesis ‘Waardestelling in de Nederlandse monumentenzorg 1981-2009’ by Charlotte van Emstede.

ALOIS RIEGL
Alois Riegl was an art historian from Austria who, around 1900, developed a theory about the different cultural values. Riegl’s theory was centred around the psychological aspects of the experience of the individual with the heritage site or building. These psychological aspects can change over time and so will the cultural values. Consequently Riegl developed a dialectic system of different cultural values which means that each value type has its counter value. For this system he made a distinction between ‘memory values’ and ‘present day values’. In image 4 the values of Riegl are presented.

Memory value
1. Age value
2. Historical value
3. Commemorative value

Present day value
1. Use value
2. Artistic value
   a. Newness value
   b. Relative aesthetic value

Image 6: Value system of Riegl

Memory values are according to Riegl the most important values as they are not influenced by the psychological aspects of the time of assessment. The memory value consists of the age value, historical value and commem-
orative value. The age value describes the value of actually seeing the age in the deteriorated parts of the building, the ‘wrinkles’, the parts that show it is old(er). The historical value describes the value of the building of the moment it was constructed, so the parts that show this time of construction. In contrast to the age value the building can not show any form of deterioration. Last of the memory values is the commemorative value which describes the value of the memory of a certain place/moment/person in time which goes beyond its own historical context.

Besides the memory value, Riegl describes the present day value which embodies the values according to the time of assessment. These values are the use value and the artistic value. The use value describes the value of the building meeting the functional requirements. The artistic value can again be separated into two values: the newness value and the relative aesthetic value. The newness value describes the appearance of an object as people tend to like things better if they look ‘new’. The relative aesthetic value on the other hand describes the value of an object according to the current aesthetic views which accidentally coincide with the aesthetic views of the past. Therefore these values differ greatly over time. (Halbertsma & Kuipers, 2014, p. 55-76)

STEWART BRAND
Another theory about buildings is defined by Stewart Brand. In his book “How buildings learn” from 1994 he describes his views on the different layers of a building and how these layers age and change at different rates, forcing adaptation and alteration or replacement.

These layers can be described as layers of permanence and result in Brands “Six S’s” theory consisting of: Site, Structure, Skin, Services, Space Plan and Stuff. With each layer having its own lifespan as changes are made due to weathering or fashion.

<table>
<thead>
<tr>
<th>Site</th>
<th>Structure</th>
<th>Skin</th>
<th>Services</th>
<th>Space plan</th>
<th>Stuff</th>
</tr>
</thead>
<tbody>
<tr>
<td>Geographical setting, location</td>
<td>Foundation, load bearing elements</td>
<td>Exterior surface</td>
<td>Wiring, plumbing, HVAC, elevators</td>
<td>Interior layout</td>
<td>Chairs, desks, pictures, lamps etc.</td>
</tr>
<tr>
<td>Eternal</td>
<td>30 to 300 years</td>
<td>20 years</td>
<td>7 to 15 years</td>
<td>3 to 30 years</td>
<td>daily to monthly</td>
</tr>
</tbody>
</table>

With these many changes over time Brand argues that buildings should be designed with unanticipated future changes in mind and thus leave room for flexibility and ease of adaptability.

“All buildings are predictions. All predictions are wrong”
- Stewart Brand -

This quote of Stewart Brand underlines again that we can not predict what will happen in the future, what the building will be used for. So we should design buildings keeping the changing pattern of the six S’s in mind.
As already mentioned, cultural values are not necessarily quantifiable which makes it harder to determine which value is most important or relevant. To determine the importance of the values, a hierarchy can be added to the matrix by encircling the boxes.

<table>
<thead>
<tr>
<th>AGE</th>
<th>HISTORICAL</th>
<th>COMMEMORATIVE</th>
<th>ARTISTIC</th>
<th>USE</th>
<th>NEWNESS</th>
<th>CONFLICT</th>
<th>NOSTALGIA</th>
</tr>
</thead>
<tbody>
<tr>
<td>SITE</td>
<td>STRUCTURE</td>
<td>SKIN</td>
<td>SERVICES</td>
<td>SPACE PLAN</td>
<td>STUFF</td>
<td>SOCIAL</td>
<td>STORY</td>
</tr>
</tbody>
</table>

As already mentioned, cultural values are not necessarily quantifiable which makes it harder to determine which value is most important or relevant. To determine the importance of the values, a hierarchy can be added to the matrix by encircling the boxes.

The Value Matrix is used by filling in the boxes of the matrix, by drawing and/or text, and help uncover all the cultural values of a building or site. This does not mean that every box needs to be filled in. Only the ones where cultural value is found.

If necessary, more values can be added to the matrix. It is important to remember that the Value Matrix is a tool to identify the cultural values and so is not an end product in itself. It is still important to clearly describe the cultural values and what we want to take into the future.
SUZANNE FISCHER VALUE MAP
Besides the Value Matrix another method will be used to determine the cultural value of the chosen buildings and site, the so called Suzanne Fischer Map. Suzanne Fischer is an architect who conducts building history research for e.g. architects, municipalities or private parties. Her method comprises a ‘traffic light system’ which shows a chronological evolution map. With this system red means that it has a high historical value, yellow means it has positive historical value and green means it has the least historical value. This map does not mean that the red part must be kept and the green part can be demolished! It only shows the evolution through time by date.

In other building history researches a different colour-code will be managed: blue (high value), green (positive value) and yellow or sometimes red (indifferent value). For this graduation project the Fischer ‘traffic light system’ will be used as the other colours might be confusing.
For the Analysis of the site and buildings we worked in groups of four students. Our group, the Middle Group consisted of Amela Rasidkadic, Guido Martin, Ruben Klinkenberg and myself. We focused on the Milling and the Bakery which are also the focus buildings for my graduation project. For our research we made a thorough Architectural and Technical analysis but the groupwork was also used for our Cultural Values assessment.

### Value Matrix Site Middle Group

<table>
<thead>
<tr>
<th>SOCIAL</th>
<th>SURROUNDINGS</th>
<th>STORY</th>
<th>STUFF</th>
<th>SPACE PLAN</th>
<th>STRUCTURE</th>
<th>SKIN</th>
<th>SITE</th>
</tr>
</thead>
<tbody>
<tr>
<td>HISTORICAL</td>
<td>- Support for military and their families - Employment - Support for military and their families - Employment - Support for military and their families - Employment</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ARTISTIC</td>
<td>- The architecture of the contents are special in their environment</td>
<td></td>
<td>- Unique machines - Sightlines - Grand scale of silos and 200m building - Rythm construction - Silo as landmark - Industrial bakery</td>
<td>- Coloured facades</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>COMMEMORATIVE</td>
<td>The name Beato reminds of a better time</td>
<td></td>
<td>- Support for military and their families - Employment - Support for military and their families - Employment</td>
<td>- Convent to Industrial</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>USE</td>
<td>Residential &amp; Vacancy &amp; Industry</td>
<td>- Shade from sheds</td>
<td>Function as machines: Pragmatic - Carrying capacity - Solid/heavy - Good condition</td>
<td>- Exclude outsiders</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NEWNESS</td>
<td>Greatness of the global harbour Older buildings indicate growth, connection with production story - Following the latest technology, &quot;anti-conservative&quot;</td>
<td></td>
<td></td>
<td>- Ground taken from the sea</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CONFLICT</td>
<td>Residential vs. Vacancy vs. Employment</td>
<td>Dictatorship vs. Employment</td>
<td>Industry vs. Rustic character &quot;new&quot; structures in &quot;old&quot; envelope</td>
<td>- Identity crisis - BETA - Vacancy</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NOSTALGIA</td>
<td>The memory of working together in the factories The memory of working together in the factories</td>
<td></td>
<td></td>
<td></td>
<td>The name Beato reminds of a better time</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
For the start of our Groupwork assessment we used the Value Matrix. With four people this meant a discussion on what each of us found valuable and why. This was helpful as we could use this Value Matrix for our personal assessment as well. Personally I did use some of the values found within the group but I did not consent with all the values. Finally we made two reports, one on the site scale and one on the buildings scale.

Value Matrix Buildings Middle Group

<table>
<thead>
<tr>
<th>SOCIAL</th>
<th>SURROUNDINGS</th>
<th>STORY</th>
<th>STUFF</th>
<th>SPACE PLAN</th>
<th>STRUCTURE</th>
<th>SKIN</th>
<th>SITE</th>
</tr>
</thead>
<tbody>
<tr>
<td>AGE</td>
<td>- Decay pavement - Carbonation concrete - Rusty metal - De-lamination plaster</td>
<td>- Carbonation concrete - Bad condition &quot;in-between building&quot;</td>
<td>- Carbonation in facade - Damage caused to bad details water-drainage</td>
<td>- Working environment - Mono-functional</td>
<td>- Layering pavements - Change public space (the relation to river) - Start industrial process and connection to other buildings on complex</td>
<td>- Machines from different times - Layers - Connections between buildings pipes</td>
<td>- Layers construction type - One silo inside and one silo outside the original building volume/ envelope</td>
</tr>
<tr>
<td>HISTORICAL</td>
<td>- Support for military and their families - Innovation of production process, growth of the army</td>
<td>- Form follows function - Diversity in space</td>
<td>- Ornamentation cast-iron</td>
<td>- Front facade bakery - New in built the old grid - Ornamentation</td>
<td>- Old tiles bakery - Determined by machines</td>
<td>- Ornamentation cast-iron</td>
<td>- Ornamentation</td>
</tr>
<tr>
<td>ARTISTIC</td>
<td>- The artistic detailing of the power-plant</td>
<td>- Old tiles bakery</td>
<td>- Keeping the old ovens</td>
<td>- Old tiles bakery</td>
<td>- New buildings on old grid</td>
<td>- Ornamentation cast-iron</td>
<td>- New buildings on old grid</td>
</tr>
<tr>
<td>COMMEMORATIVE</td>
<td>- Tiles tell story of old bakery</td>
<td></td>
<td>- Keeping the old ovens</td>
<td></td>
<td>- New buildings on old grid</td>
<td>- Ornamentation cast-iron</td>
<td>- New buildings on old grid</td>
</tr>
<tr>
<td>USE</td>
<td>- Reduction army, closing of the MMC</td>
<td>- The machines seem to still work when active</td>
<td>- Carrying capacity - Good condition</td>
<td>- Solid: keeping heat out</td>
<td>- Good preservation</td>
<td>- Small openings: keeping the sun out - Natural light</td>
<td>- New buildings on old grid</td>
</tr>
<tr>
<td>NEWNESS</td>
<td>- Greatness industrial scale - Good preservation</td>
<td>- Machines in good condition</td>
<td></td>
<td></td>
<td>- Machines in good condition</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CONFLICT</td>
<td></td>
<td></td>
<td>Positive vs. Negative History</td>
<td>Positive vs. Negative History</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NOSTALGIA</td>
<td>Employment</td>
<td></td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>
### VALUE MATRIX SITE

<table>
<thead>
<tr>
<th>SITE</th>
<th>STRUCTURE</th>
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<td>AGE</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HISTORICAL</td>
<td>- Connection to river</td>
<td>- Closed off</td>
<td>- Convent to Industrial</td>
<td>- Support for military and their families</td>
<td>- Employment</td>
<td>- Support for military and their families</td>
</tr>
<tr>
<td>COMMEMORATIVE</td>
<td>- Silo and Flower Tower as a landmark</td>
<td>- Sightlines - Grand scale of Silo's and buildings</td>
<td>- Pragmatic spaceplan adjusted to its use - Define streets and squares</td>
<td>- Support for military and their families</td>
<td>- Employment</td>
<td>- Support for military and their families</td>
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<td>ARTISTIC</td>
<td>- Silo and Flower Tower as a landmark</td>
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<td>- Support for military and their families</td>
<td>- Employment</td>
</tr>
<tr>
<td>NEWNESS</td>
<td>Residential vs Vacancy vs Industry</td>
<td>‘New’ structures in ‘old’ envelope</td>
<td>Industry vs Rustic character</td>
<td>- The memory of working together in the factories</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### THEMES
- Character
- Process
- Memory
THEMES
As mentioned the Value Matrix is a tool which can be used to unravel the cultural values. While filling in the matrix it is noticeable that some found values centre around the same theme or are basically the same or only slightly shift in focus. For the site of the Manutencao Militar Complex three themes were found namely: character, Process and Memory.

CHARACTER
Within the theme of character a lot of values are found. The word ‘character’ can be described by multiple definitions like: “the aggregate of features and traits that form the individual nature of some person or thing” (http://www.dictionary.com/browse/character), or “the particular combination of qualities in a person or place that makes them different from others” (http://dictionary.cambridge.org/dictionary/english/character). Or my personal favourite:

\[
\text{char\cdot ac\cdot ter (k\ddot{a}r\'ek-ter): The distinguishing nature of something. (http://www.thefreedictionary.com/character)}
\]

It is this distinguishing nature of the place that is so hard to define in words or values as what we want to take into the future. What makes the MMC the MMC and how do we keep these essential qualities so it will not loose its character? As found in the descriptions a character can be made up of a combination of qualities or in this case values. The found character values will be described and explained by the values of Riegl and specified by the building distinction of Brand.
Artistic - Space plan

As the site is an industrial complex the scale of the buildings and open spaces is also of an industrial size, which is large. This big scale is characteristic for the MMC as it underlines the industrial atmosphere.

Another aesthetic aspect of the space plan are the sightlines in the streets ending with an industrial structure: the Silo or the Watertower. This ending of the street gives a clear direction to the site.

Artistic - Structure

Two landmark structures can be found on the MMC site, namely the Silo and the so called Flour Tower. The Silo is better visible from outside the MMC but viewed from higher up the hill both structures are easily visible. The structures are approximately 35m high and have a distinct appearance. The Silo is a high closed structure with circular shapes and the Flour tower has a strong concrete grid facade both acting as a landmark or placemaker for the MMC. Although the height of the buildings is purely functional for the production process they, unintentionally, became the landmarks for the MMC.

Image 18-19: The big scale of the Silos and the 200m length of the Pasta factory.

Image 23-24: The Silo and the Flour Tower

Image 25: The Silo (right) and Flour Tower (left) from outside the MMC.
The MMC is an industrial site so everything evolved around the production process and changes were made for pragmatic reasons. The space plan also responded to this pragmatic character and is thus set up in a way that it was easy for the trucks to move around and pick up the goods from the buildings. In the middle we identify a series of streets and on the sides open space which can be referred to as squares.

The streets and squares differentiate from each other in character enabling it to define more specific characters to each street or square. Further research was conducted to describe the overall character with one word. (For a more detailed analysis of defining the character see the architectural analysis of the middle group p. 95-105.) For the streets we identified: the industrial street between the Pasta factory and Bakery, the intimate street between the Bakery and the Milling and the rustic street between the Milling and the Convent.
For the squares we identified the square on the side of the Silo as diverse and the square on the side of the Flour tower as intimate.

When transforming the MMC the character of the site must be taken into account. How to incorporate the defined characters in the newly shaped spaces?

Image 28: Different characters of the streets (Architectural Analysis Middle Group p. 101)

For the squares we identified the square on the side of the Silo as diverse and the square on the side of the Flour tower as intimate.

Image 29-30: The two squares (Google maps with own editing)

When transforming the MMC the character of the site must be taken into account. How to incorporate the defined characters in the newly shaped spaces?
PROCESS
The Manutencao Militar Complex was an industrial site which existed purely to produce its goods for the army. Therefore there are values found within this pragmatic industrial production site which will get the theme of Process referring to the production process.

PRODUCTION PROCESS
The grains enter the site at the large silos. From there the grains are transported to the Milling building in the centre where the grains are milled into flour. The flour is then transported to the different factories to make the final products of bread, cookies and pasta.

From a historical point of view the MMC always had a direct connection to the water as the goods were directly transported by boat. Even before the MMC was established the water used to come all the way up to the convent, so the MMC is created on man-made land. As the port activities grew the river got increasingly more disconnected from the MMC.

LOGISTICS
D: Distribution, import
1: Warehouse, storage of products
2: Milling, the process of changing wheat into flour
3: Production, the flour and other ingredients are combined to create food
A: Aerial transport
D: Distribution, export
S: Supermarket
- Inner logistics
- Road connection
- Train
1:10.000

Throughout the site there are several connecting elements like pipes and rails. These elements connect the buildings via a product line which means that the overall process of the building can be discovered just by carefully looking at the connections between the different buildings. Next to the connections there are some additional roofing structures which also give an indication of the production process as these where the dry places where products could be delivered.
Age & Newness - Story / Conflict - Structure

The buildings of the MMC clearly show a transformation in time. There are old buildings like the convent and relatively new structures like the Silo. The newer parts are sometimes just additions to older buildings as can be seen in between the Bakery or the end of the Milling building (with the Flour Tower and silos). These additions or expansions show how the production process flourished and expanded over time and reveals also the importance of the Portuguese army, even though it is debatable if the glorification of the Portuguese army with their role in colonisation and suppression should be seen as something positive.

Image 38: The additional small silo between the bakery and cookie factory
Image 39: Aerial view showing the different styles of the buildings as they were constructed in different times. (Google Maps)
The last theme is all about memory which is something intangible but nevertheless important to understand the place and to complete the story and feel of the Manutencao Militar Complex. What did the MMC mean to the people, its workers and the neighbourhood?

The Manutencao Militar Complex was an industrial site where a lot of people from Lisbon worked. Especially as the Portuguese army grew more and more products were needed and the MMC expanded as well. Nowadays the site is closed and very quiet with the absence of workers and the noise of the machinery. During the DOCOMOMO workshop and later travels to Beato we asked the local people if they knew about the Manutencao Militar Complex and surprisingly few people remember the industrial site. Especially the younger generation does not know about the site whilst older people better recall the activities. To give an intangible value for this phenomenon we could value this former productivity of the complex even though it is not remembered as such by everyone.

Another intangible value of the complex can be found in the support from the complex towards the military families and employers. The supermarket of the site was for the families of people who were part of the army. And so the people worked at the factories but also got something in return. The site therefor had a social value to its people and neighbourhood.
Image 41: The Supermarket
(Groupwork Cultural Value p.9)

Image 42: Workers of the MMC
(DOCOMOMO Archive photographic survey)
CONCLUSIONS SITE

CHARACTER
- Closed Off
- Big Scale
- Landmarks
- Streets and Squares

PROCESS
- Connection River
- Production Site
- Connecting Elements
- Layering Buildings

MEMORY
- Former Productivity Complex
- Former Social Function
DILEMMAS
The found Cultural values are the essence of that what makes the MMC the MMC, and thus the values we want to take into the future. When transforming a site these values can cause for the so called ‘dilemmas’ as the values might be contradicting with what is desired for future use. For the MMC there are two dilemmas found:

CLOSED OFF SITE VS CONNECTING
BIG SCALE VS HUMAN SCALE

First of all we value the closed off character of the site which relates to its military background. However for future use the MMC should be accessible and connected to the neighbourhood as well as embedded in the surrounding urban fabric. The question remains: where and how to open up the MMC to maintain its closed off character while being accessible to its surroundings?

The next value we found was the ‘big scale’ character which underlines the industrial size of the MMC. This big scale required for the industrial function is in contrast with the scale required for people living there, the human scale is missing. Window frames are too high, making it impossible to look inside, and overall the spaces are over-dimensioned everywhere. This scale is impressive but it needs to be liveable as well. The question which arises is: how to incorporate the human scale without losing the overall big scale character? This is also an opportunity to play with the changes in scale within the design.

So in conclusion we value the character, process and memory of the MMC.

To maintain the character of the MMC the site has to:
- Have a closed off feeling while being connected (dilemma).
- Maintain its big scale but also introduce a human scale to make it liveable (dilemma).
- Keep its landmarks of the Silo and Flour Tower.
- Maintain the spaceplan of different streets and squares.

To maintain the process of the MMC the site has to:
- Reinstate a connection with the river (important: a connection does not have to be physical, a visual connection is also a connection).
- Keep its connecting elements on the site.
- Show the layering of the different building types over time.

To maintain the memory of the MMC the site has to:
- Reinstate the former productivity of the site. (important: this does not mean producing goods but being a place where the community goes to, an active place.)
- Reinstate the former social function of the site. (meaning: bring the social factor of the site back, what can the MMC do or mean for its surroundings?)
Image 43: Machines first floor of the Milling (Hielkje Zijlstra)
### VALUE MATRIX MILLING

<table>
<thead>
<tr>
<th></th>
<th>SITE</th>
<th>STRUCTURE</th>
<th>SKIN</th>
<th>SPACE PLAN</th>
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<td>- Start industrial process and connection to other buildings on complex</td>
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CHARACTER
The Milling is one of the buildings in the centre of the MMC and before transforming it is necessary to define its character, the essence of the Milling. What are the characteristic qualities of the building?

Historical & Use & Newness - Stuff

- Machines from different times - layers
- Machines in good condition
- The machines seem to still work when active

The Milling has a lot of machinery which is still present and in good condition. These machines do give a lot of character to the spaces and underline the historical use, and industrial atmosphere but are also potentially in conflict with a new function for the building. How to deal with all the stuff? What does removing the machinery mean for the character of the space?

Historical - Structure

The Milling building produces flour from wheat and every stage of this process is situated in a different part of the building. These four building parts are clearly visible in the difference in interior, the construction, materials and even in the facade of the Milling. Within the building there are two silo parts: small silos and large silos, in between these silos a part with machinery is present and at the end of the large silos the Flour Tower where the flour is put into bags and stored before transported. The clear difference in building parts per activity is characteristic for the Milling.
The artistic values found in the structure and space plan are similar to the ones found for the site. The Flour Tower acts as a landmark for the MMC with its height and distinctive concrete grid structure. It marks the ending of the Milling.

Besides the landmark also the large industrial scale is a recurrent value. This industrial scale is not only present in the exterior but also in the interior of the Milling.
PROCESS
The Milling produced fine flour from wheat. Starting in the small silos where the wheat was stored from there the wheat was washed up to six times. After the washing the actual milling commenced in the large middle part, the more times the wheat was milled the finer the flour. The final product, the flour, was stored in the large silos and from there parts were put in bags in the Flour Tower and went to the Supermarket or to the other buildings to produce bread, cookies or pasta.

Use - Space plan
The machines obviously are a big part of the production process. They determine the layout and spatial experience of the separate spaces. The importance of the machinery is stressed when realising that the spaces are adapted to the space needed for the machinery. New machinery meant new spaces and if needed a new construction.

Conflict - Space plan
The process of making flour from wheat has several production steps as previously mentioned. These steps are ‘storing’ ‘washing’ ‘milling’ storing’ and ‘packaging’ and are all done in their own building part. This production is a vertical production starting from the top floor (by either filling a silo or the first round of milling) to the ground floor. The overall process however is a horizontal movement on the ground levels taking a finished product to the next step. The wheat comes in at one side and the flour leaves the building on the other side.

Image 55: The production process of the Milling building

Image 56-57: Machinery inside the Milling (left: Hielkje Zijlstra)

Image 58: Section showing the vertical and separate production

Image 59: Section showing the overall vertical process
Historical - Site

The Milling building is not the first building where the wheat gets stored, this is actually done in the large Silo on the complex. But nothing happens to the product before it comes to the Milling. In the Milling the actual production starts with producing flour from wheat. This flour is necessary, the one ingredient binding all the other factories. It is therefore that we can call the Milling the start of the production process.

As mentioned for the site the connections between the buildings are valued. For the Milling this means something extra as well because, looking from a historical perspective, the Milling had more connections not only for products but also bridges between the Milling and Bakery.

Image 60-61: The production process of the site distributing the flour from the Milling (60, Groupwork Cultural Values p.11). Connections, bridges, between the Milling and the Bakery (61, Jeroen van Lier).

Historical - Space plan

As the main function of the Milling was to produce the amount of flour that was necessary the changes made over time were pure functional and pragmatic. The production was the number one priority and not the building. These changes are still visible in the different layers of construction and machinery over time.
CONCLUSIONS MILLING

CHARACTER

- MACHINES
- FOUR PARTS
- LANDMARK
- BIG SCALE

PROCESS

- MACHINES
- ALL DIFFERENT PARTS WORKING AS ONE
- START OF PRODUCTION PROCESS
- PRODUCTION > BUILDING
DILEMNAS
The found Cultural values are the essence of that what makes the Milling the Milling, and thus the values we want to take into the future. When transforming a site these values can cause for the so called ‘dilemmas’ as the values might be contradicting with what is desired for future use. For the MMC there are two dilemmas found:

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<tr>
<th>MACHINES</th>
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The most important dilemma of the Milling is the dilemma of the machinery. This dilemma occurs in most industrial sites as the machinery is what the site was all about. The skin of the building is just protecting the machinery and its production process. But on the other side, the machinery prevents a new function to settle inside the building unless that function is a museum about the machinery like the MAAT museum in Lisbon where a large part of the museum is the permanent exhibition of the machinehall and the former electricity production (https://www.maat.pt/en). But we cannot transform every industrial site into a museum. It is important to look forward to future needs of a place and community as well as what we want to take into the future. So the dilemma between the machinery and the new function is evident. Will we keep (all) the machinery or do we get rid of everything in order to make space for a new function?

The next dilemma we found coincides with the dilemma for the site which is the ‘big scale’ character as explained on page 21. This big scale is also present in the Milling and thus gives a dilemma of wanting to keep this industrial characteristic and meanwhile wanting to make it suitable for people. Obviously the Milling was build for people to work in the factory but this large scale needs a human factor when transformed to a new function which is not a factory. It is also a potential to use this large scale to design unique spaces with a difference in scale.

So in conclusion we value the character and the process of the Milling building. Noticeable is that the memory value (present in the site analysis) is left out. This because the Milling is in the centre of the MMC and therefor not very visible to the neighbourhood making it not very memorable to its surroundings. And over time the people who worked in the Milling are no longer there, the new generation does not remember the Milling. Overall it can be said that the memory values of the Milling are not present.

To maintain the character of the building the Milling has to:
- Try to incorporate (parts of) the machinery in its new function.
- Keep its distinctive different parts.
- Keep its landmarks of the Flour Tower.
- Maintain its big scale but also introduce a human scale to make it liveable (dilemma).

To maintain the process of the building the Milling has to:
- Try to incorporate the machinery in its new function.
- Function like the old process: vertical process in each building part but together working as one horizontal production on the ground floor.
- Be the starting point of the MMC.
- Be pragmatic in its essence.
Image 62: Old ovens inside the Bakery (Hielkje Zijlstra)
### VALUE MATRIX BAKERY

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#### Character
- Representative front facade and old ovens space
- Layers construction type
- Form follows function
- Diversity in space
- Machines from different times - layers
- Ornamentation trusses and cast-iron columns
- Front facade Bakery - Chimneys
- Determined by machines
- Old tiles Bakery
- The exterior “hides” the different layers, where the interior reveals them
- Machines in good condition
- Keeping the old ovens
- Tiles tell story of old Bakery

#### Process
- The exterior “hides” the different layers, where the interior reveals them
- Machines from different times - layers
- Machines in good condition

#### Memory
- Machines in good condition
CHARACTER
The Bakery is one of the buildings in the centre of the MMC and before transforming, it is necessary to define its character, the essence of the Bakery. What are the characteristic qualities of the building?

Historical - Structure
The Bakery used to have a cast iron column construction but in 1955 the middle part of the Bakery changed because of development of the production process (see page 41). The new ovens needed more space and therefore the cast iron columns were replaced by a monolite concrete structure and an extra floor has been added that 'completes' the volume. This newer middle part now holds a different character than the older parts. The middle part has a more industrial feel with everything oversized and a lack of details, a space with one purpose and no distractions: baking bread. Even though it is not the most representative space, the structural change emphasizes this central space as a different space of change and purpose.

Historical - Site & Stuff - Commemorative & Artistic
Probably most notable of the Bakery are the old ovens. These ovens are situated at the entrance of the Bakery. This space has a representative character with shiny warm redbrown honeycomb tiles, cast iron columns, a vaulted ceiling and most important the old ovens. These ovens have decorative painted tiles depicting the process of making bread. In front of the ovens the old bread paddles hang from the ceiling giving lots of character to the space. Over time new ovens were needed making these old ovens unnecessary. As the site was industrial, all decisions made would probably be pragmatic, why then would they have kept these ovens? A reason could be that they wanted to be able to continue baking while the space for the new ovens was build. Another reason could be that they wanted to keep the old ovens for commemorative reasons. Nowadays they do exactly that: commemorate the bakery and give lots of character to the space. From the outside the Bakery we can see the chimneys of the old ovens enhancing the industrial character of the site.

Artistic - Structure
The Bakery is layered in lots of ways but special attention should be given to the structure. First of all we find different columns. There are the cast iron columns which are interrupted by concrete columns in the centre space. Then there are three different kind of trusses found within the Bakery. Wooden trusses and two types of steel truss-
es. The differentiation in the structure gives a lot of character to the Bakery as it shows the layers in time as well as being aesthetically pleasing elements.

Distinctive for the Bakery are the completely different building parts in the interior which do not show at the exterior. First there is the representative old oven part. Second the large concrete structure centre space and third closing with the more streetstyle industrial space. The difference can be found in the structure, different materialisation (e.g. flooring: redbrown honeycomb tiles, natural stone tiles in diamond pattern, dark bricks in a basket weave pattern) and machinery (old ovens, large new ovens, small movable elements). These different parts each contribute to the diverse character of the Bakery.

Image 69 t/m 74: Wooden and steel trusses with different details

Image 75-76-77: Different building parts shown in structure, materialisation and machinery. (Hielkje Zijlstra)
The production is the most important function for the building. For this production machines are necessary. They determine the spaces, how it is used and how it is designed. New machinery means new spaces and if needed a new construction. Within the Bakery we can find machinery from different times like the old ovens and the newer more industrial ovens (automatically transports the bread) which all seem to be in good condition. There is also a difference in fixed and movable machinery or objects used for the baking process. Nowadays a part of the machinery has been removed.

The process of making bread has several production steps which can be shortened as ‘storage’ ‘kneading’ ‘resting’ ‘baking’ ‘packaging’. Each of these steps has its own specified space in the Bakery. This process is visible in the connections between spaces which shows the route of the product.

The Bakery produced, no surprise, bread. But besides bread there was also a space for a small coffee factory. In between the Bakery and the cookie factory flour was stored in small silos from there the flour was divided between the two factories. The mixture for the bread was made and the dough rested before going into the oven. From the ovens the bread was stored at the first floor and through slides loaded into trucks to ship the bread for the army.
Use - Structure & Artistic - Space plan

The Bakery has a clear linear direction which is determined by its structure and its machinery. From the entrance there is a straight line through the entire building guiding through its spaces.

MEMORY

Even though there is the difficulty to have a memory value with a building that is not even visible from the street memory value can be found within the Bakery.

Commemorative - Story

The Bakery has a unique space that tells the story of the Bakery and its former glory. The entrance space with the old ovens is decorated with tiles that shows the history and the purpose of the building. Even when the people working there are gone, new visitors will also know about the building when entering this space.
CONCLUSIONS BAKERY

CHARACTER
- OLD OVENS & MACHINES
- LAYERED STRUCTURE
- TRUSSES
- BUILDING PARTS

PROCESS
- PRODUCT ROUTE
- MACHINES
- LINEAR DIRECTION

MEMORY
- STORYTELLING TILES
DILEMMAS
The found Cultural values are the essence of that which makes the Bakery the Bakery, and thus the values we want to take into the future. When transforming a site these values can cause for the so called ‘dilemmas’ as the values might be contradicting with what is desired for future use. For the MMC there are two dilemmas found:

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<th>BIG SCALE VS HUMAN SCALE</th>
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As for the Milling, the most important dilemma of the Bakery is the dilemma of the machinery (see Milling conclusion). It is important to look forward to future needs of a place and community as well as what we want to take into the future. So the dilemma between the machinery and the new function is evident. Will we keep (all) the machinery or do we get rid of everything in order to make space for a new function?

Within the Bakery, the machinery is already partly removed and the movable objects are now on display within the Bakery or in the MMC museum in the old convent. Some of the machinery are decorative, like the old ovens, but the huge newer ovens are mostly blocking the light from the street. We could say that there is a hierarchy in importance for the machinery that have to stay to maintain the character of the Bakery.

The dilemma of the big vs human scale is not found within the Bakery as it has a much more human scale. The dimensions of the Bakery are not extreme, this is also shown with the scale of the machinery as people were needed to operate them.

So in conclusion we value the character, the process and the memory of the Bakery. Even though the Bakery is not visible from the street, the representative facade and old ovens with the storytelling tiles, have a memory value for the building.

To maintain the character of the building the Bakery has to:
- Try to incorporate (parts of) the machinery in its new function.
- Keep the (layering in the different) construction types.
- Keep as many of the artistic structural elements of the building.
- Keep its distinctive different parts.

To maintain the process of the building the Bakery has to:
- Try to incorporate the machinery in its new function.
- Function like the old process: follow the production line.
- Have a clear linear direction in its space plan.

To maintain the memory of the Bakery the site has to:
- Keep the old ovens and the decorative tiles in its setting of the space now.
DEVELOPMENT MILLING & THE BAKERY

A brief overview of the development of the Milling and Bakery. For more information see the Architectural and Technical analysis of the Middle group.

1722 - Origin of the Military Service.

1862 - Experiment to manufacture and supply bread to the army. A Military Bakery is created on a site now known as Rocah do Conde de Obidos named “Padaria Militar”.

1896 - Ministerio da Guerra takes possession of the current site. Name changes from ‘Padaria Militar’ to ‘Manutenção Militar’.

1898-1910 - Construction of several factories, including the Milling and the Bakery.

1920-1930 The Cookie factory has been added to the ensemble.

1955 - Part of the Bakery has been changed because of development of the production process. Therefore the cast iron columns have been replaced by a monolite concrete structure and also a floor has been added that ‘completes’ the volume.

1961-1974 - During the Ultramar War, Manutenção Militar is very active in the provision of food for the troops. In this period the MMC reached its maximum level of production: silos were built and the production process was modernized, especially in the mill building. The new machines asked for a specific concrete structure, for that reason most of the original floors were removed.

1970s - Almost the complete roof of the original Milling has been replaced. This is the consequence of internal changes.

1975 - Independence of the former colonies: MMC had to reduce the production.

1980s - The Flour Tower has been added to the ensemble. In 2011 the complex officially closed most of the factories, of which the bakery was the last.
MILLING
With the ‘traffic light’ system of Suzanne Fischer a chronological evolution map of the Milling is made. Noticably are the changes made on the interior structure leaving the original walls intact. The later additions which replaced part of the older structure are build in the same grid (width).
With the ‘traffic light’ system of Suzanne Fischer a chronological evolution map of the Bakery is made. Noticably are the changes made on the interior structure leaving the original walls intact. The later addition of the small silos in between the bread factory and the cookie factory made for a faster production and better connection between the two buildings.

Image 91: Chronological evolution map Bakery (Technical Analysis Middle group p.120)
SUZANNE FISCHER

On page 9 the method of the value map of Suzanne Fischer was explained resulting in a chronological evolution map shown on page 32. Only age does not directly mean that something is valuable. For the MMC this ‘traffic light’ method is used to show the personal values assessment for the buildings on the site (see image 67). A description of all the buildings and what is important about that building is briefly explained to support the personal values assessment. This is however a personal and individual interpretation of the site and its buildings.

As described in this cultural values assessment the theme of ‘character’ is hard to define but important to maintain when transforming heritage. The character is defined by the parts/things and stories that make the MMC the MMC. The building (parts) which are the most important of keeping that essence or character are therefor marked with a high value:

1. Supermarket - The base of the supermarket is one of the oldest structures and the Supermarket had an important social role to its neighbourhood.
4. Convent - The Convent reminds of the religious and former wealthy Beato and dates from 1665.
5. Powerplant - The esthetical qualities of the Powerplant with its arched windows and high ceiling and roof structure are of high value for the site.
7. Watertower - The watertower is a structure that underlines the industrial character of the MMC.
11-13. Pasta factory - The Pasta factory with a length of 200m and rigid concrete structure acts as a boundary between the MMC and the road.
14. Silo - The Silo acts as a landmark and underlines the industrial character of the MMC.
16. Bakery - The old part of the Bakery gets a high value as described in the previous chapters.
17. Cookie factory - The Cookie factory is one of the oldest structures.
18. Milling - The Milling gets a high value as described in the previous chapters.
20. Flour Tower - The Flour Tower acts as a landmark or placemaker for the MMC and gives character to the place with its rigid concrete structure.

Besides the high value there are also some average value structures as they do have some essential qualities but mostly as part of something else and not on its own.
1b. Supermarket bakery - Later addition with no clear own identity.
2. Small convent structure - Smaller version of the Convent.
8 and 9. Repairs and administration - Lesser version of the powerplant.
10. Small warehouses - The small warehouses are cut off from the site by 8 and 9 but do mark the entrance to the MMC.

1a. Hall - Additional small hall-type with concrete structure
3. Garage - Additional garage like structure shielding parts of the old convent.
6. Shed - Shielding the watertower and aesthetical building 5 and 8.
13a. Pasta factory - later addition attached to 14. Silo undermining its strong stand alone character.
15. Shed - later addition of concrete blocks
16a. Small Silo and storage - very badly constructed and thus damaging the Bakery and Cookie factory.

The buildings or structures appointed with a low value are mostly added, shed like structures which undermine the underlying qualities of the buildings surrounding them.

15a-d. Warehouses - With triangular shaped buttresses.
16b. Bakey - The structure is replaced by a concrete structure.
19. Silos - Not as valuable as the 14. Silo but part of the Milling.

Image 93: Personal value assessment site 1:4000
We got to work with a new method, the value matrix, and I found this a great tool to analyse with but it can be a bit confusing on what is meant with which value. Therefore when using this tool a knowledge about the theories of Riegl and Brand is necessary. As there are so many boxes to fill in you tend to try to think of more values and describe aspects of the site or building which actually are no values but just something that is there. Another thing I found useful was filling the boxes with more people to get a discussion about the different values. Later, when looking back more critically, the real values could be filtered out of the matrix. I think it is very important to remember that the matrix is a tool and not an end product. I would also recommend anyone working with the tool to look for certain themes as they show the categories in which to find the essential values of a site or building. Defining a value can be quite challenging as it is difficult to pinpoint what it is that is valuable especially when it concerns intangible stories.

Looking back at my design and how I used the defined cultural values in my graduation project I found that whenever I was stuck in the design I had to go back to the cultural values to refresh and reshape what I value and why. This helped to make design decisions starting from the existing. The heritage actually provides all the tools to design, but you really have to delve into it first and get to know the buildings.

**CONCLUSION**

The Manutencao Militar Complex has many cultural values which can be discovered using the Value Matrix. The values found can be grouped in the themes of Character, Process and Memory. While transforming a site it is important to try to maintain these values in order to keep the essence of the MMC. The cultural values are important for the transformation framework as they provide starting points for the overall design and should be viewed as opportunities on which to build a design.
TEXT


IMAGES

90 - 91. Technical Analysis Middle Group - Amela Rasidkadic, Guido Martin, Noelle Dooper, Ruben Klinkenberg.


5. Lecture of Nicholas Clarke


11. Lecture of Hielkje Zijlstra

43 - 45 - 56 - 64 - 65 - 75 - 76 - 77 - 80 - 81 - 85 - 87. Hielkje Zijlstra

61 - 88. Jeroen van Lier

86. Docomomo International photo archive MMC