

# **Beyond the call of Duty**

## **Transformation of the Military Milling factory of the MMC into the Culinary Art school of Beato**

**MSc Architecture, Urbanism & Building Sciences  
Graduation reflection paper  
Lisbon graduation  
Studio Heritage & Architecture  
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**Abstract** – The MMC is a secluded military zone that used to produce food for the army of Portugal in times of war. The area is vacant and decides the neighborhood of Beato, but it is now open for public development. The proposition in this paper is to transform the main production factory (milling factory) in a Culinary Art school. You will read about the struggle and scientific research that led to this design. The Culinary Art school interacts with the city on different levels of scale. The masterplan that accompanies the design reinstates the rich and royal green history of Beato. The design focusses on telling the narrative of Beato and the milling factory as singularities of this industrial heritage.

**Key words** – **military city, culinary art School, Lisbon, Heritage & Architecture, graduation project**

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## Introduction

*The structure of the reflection paper.*

This reflection is part of my P4 graduation presentation. This last year I had the privilege to do my graduation project about redevelopment of the military zone in Lisbon. This paper is the reflection about the preliminary design. The main issue I want to address is to show how the design uses the singularity of the MMC, in particular the milling factory. Also showing the methodology used and the design choices made in the midst of this design process.

The following five subjects are covered in this reflections;

1. *The relationship between the project and the wider social context.*
2. *The relationship between the methodical line of approach of the graduation lab and the method chosen.*
3. *The relationship between research and design.*
4. *The relationship between the theme of the graduation lab and the subject/ case study chosen by the student within this framework (location/object).*
5. *The final steps to complete the design*

This reflection uses the information of the past year to reflect upon the given subjects. It relates with the framework of Heritage & Architecture. There is some literature of earlier studies about methodology and the design process to relate my position. The paper consists of 5 chapters and each chapter has a subtitle to explain its content. Some titles (chapter 3) reflect on the military character of the milling factory.

Research question; How can the ‘singularity’ of the industrial Manutenção Militar Complex (MMC) be preserved (kept) when disclosing the site to it’s context and make this ‘singularity’ tangible for the city of Lisbon?

A journey to discover the rich characteristics of Beato, the MMC, and the Milling factory.



**Figure 1:** Existing situation of the Milling factory, 3D model in front of the building.



Source: Work of author

**Figure 2:** New situation of the Milling factory, 3D model in front of the building.

Source: Work of author

## 1. Desperate situation

*The relationship between the project and the wider social context.*

### 1.1 Enclosing a military zone

The Manutenção Militar Complex (MMC) was an industrial facility that produced food, uniforms and other goods for the Portuguese Army. It had a secluded nature due to its military status. As a result of the incredible shrinkage of the Portuguese Army from 200.000 to 20.000 active soldiers it was decided upon outsourcing the supply of military food. This led to the substitution of the MMC by a public enterprise MM-Gestão Partilhada in 2015 which transformed the property from private to public leading to the disclosure of the military city.

This gave freedom to establish a new program in the MMC. The proposition in this reflection is a Culinary Art school to help increase the educational level of the locals, to attract young ambitious people to the area and to reestablish the MMC as a food centre in Lisbon. The Culinary Art school is designed to educate 300 students each year to ‘produce’ professionals which have mastered the practical and theoretical art of culinary cooking. The school wants to innovate in the arts of food by scientific research and cultivate the Portuguese cuisine to its limits.

The choice for a Culinary Art school is not solely based on the history of the MMC, but also on the hidden and rich culture of the neighborhood, Beato itself. The build and expansion of the MMC has led this rich history to disappear over time. Because before the MMC claimed the lands and the city merged, Beato was rich of royal gardens and villa’s where royals would spend days in order to escape their busy lives from the city. This contradictory of narrative can be restored by the build and the masterplan together with the Culinary Art school. In the masterplan the greenery will be restored and

expanded as a new patchwork. It interacts with the Culinary Art school as it could cater to local food businesses and serve as hotspot for leisure activities as well as creating jobs for the older local people with no degree of education.

All in all, the Culinary Art school improves the prospect of Beato and the MMC as a current vacant facility. Whereas Beato will regain its hidden rich culture. On top of that I would like to remark that the interaction between building and city have taught me a lot about how a building has its place in a city, but also how the city is a place for its buildings.

### 1.2 Transferability of a Culinary Art School

Designing a school in reused buildings is not unique, it is well known as one of the more possible programs to reuse industrial heritage. There are already a few industrial heritage sites where food or beverage plays a huge role. Take the Toronto distillery site for an example. Food can be a luxury as well as a necessity. Food will never go out of style which is why there will always be a demand for culinary professionals with designated skills. Therefore this concept can be transferred worldwide on other industrial heritage sites. The Culinary Art school of Beato is a first in Lisbon. The most important criteria for a cooking school is the space for kitchens. In terms of creating solutions for placing a kitchen in existing industrial spaces I found that the kitchen can serve multiple purposes within the architectural design. It can be perceived as an object as well as part of the structure.

A critical note from my mentors was given on how to solve the quantity of installation systems necessary to ventilate the kitchens cabinets as well as where the specific places for technical spaces would be. This made me realize that the technical space needed to merge with the two new facility ‘towers’ designed for the Culinary Art school. Industrial heritage sites have an advantage as these are often massive buildings (architectural space) once created to house machines (equipment). A visible installation does not break up its industrial character it rather amplifies it as the air vents could be part of an architectural expression.



**Figure 3:** Situation North (l) and South (r) side of the MMC in 1856 and 1963, pictures displaying the rich culture and the lost royal gardens of Beato.

Source: municipality of Beato

## 2. Research as input for design

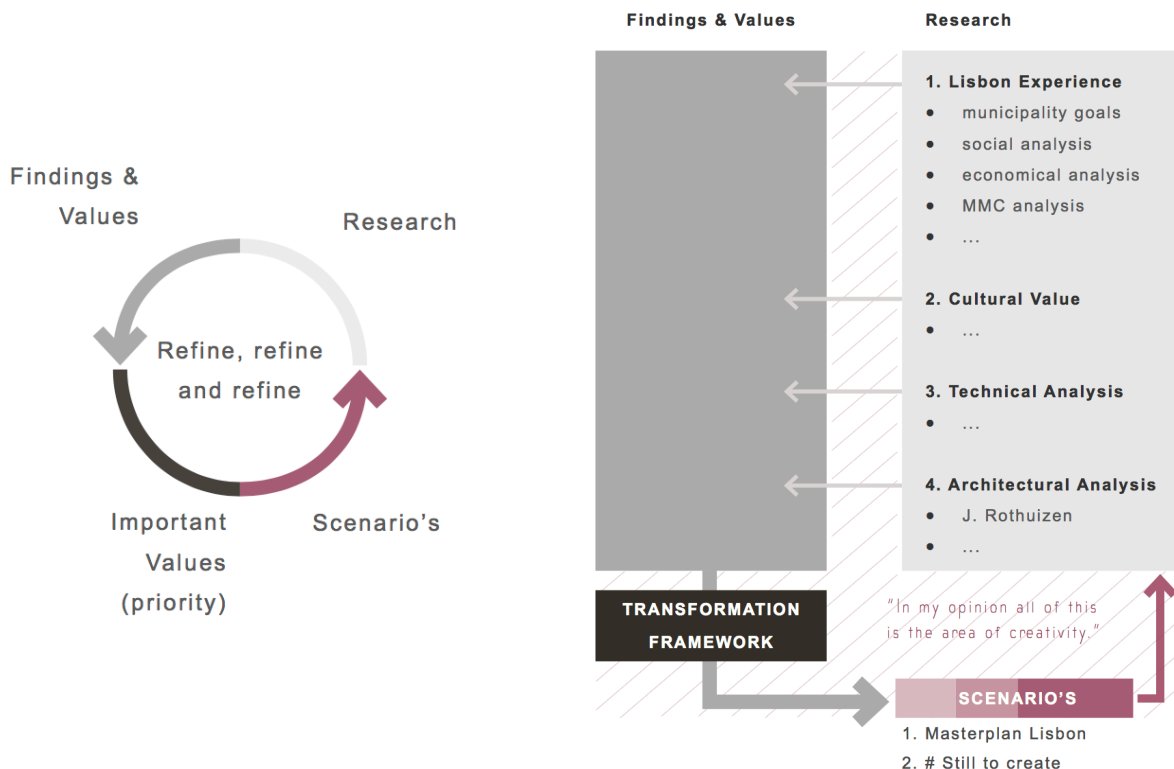
*The relationship between the methodical line of approach of the graduation lab and the method chosen.*

*The relationship between research and design.*

### 2.1 Methodical line of approach

The studio Heritage & Architecture defines research and design on all levels of scale: the use of materials and technology, the reuse and redesign of a building or a building complex, and the development of landscape and urban structure (Graduation studio manual, 2016, p 4 - 5). The focus of the studio is to translate the cultural historic and technological research into a design. We as heritage and architecture students use a methodical line of approach in our research. At the start of the graduation studio the choice of method and argumentation, which preceded the research, was part of my study plan. In figure 4 you can see the explicit structure of this methodical line of approach.

In short the method uses research of Cultural value, Architectural and Technical analyses as input for the design. After the analyses a value assessment together with the found qualities create a transformation framework. From the transformation framework a thorough design can be drawn containing the found facts, narratives or arguments. Repeatedly the intervention needs to be reflected through the existing reality and the desired effect.



**Figure 4:** Methodology of Heritage & Architecture, the schematic structure and steps.  
Source: Work of author

## **2.2 Placed in context**

The methodology can be compared with the construction of a case, the further I got in the process, the better I could take position. The method is clear and thorough, as it specifically focusses on finding the narratives (what) and creating the arguments (why) for the intervention. The narratives are usually related to architectural history in this case the MMC and specific the Milling factory. The arguments (why) for the intervention are found in the research. I learned that the coherency through all levels of scale was the most difficult to establish. Where the narrative (read: guiding theme) correlates with the urban scale as well as detail scale. This correlation between level of scales is of vital importance to address the challenges and face the responsibilities of working on existing built structures, because sites contain often more than one particular building.

But with all methodologies related to design and approach I am obliged to keep an open mind, as Elise van Dooren in her paper 'Making explicit in design education' once taught me that; "designing is in general, conceived as a complex, personal, creative and open-ended skill. Performing a well-developed skill is mainly an implicit activity. In teaching, however, it is essential to make explicit. Learning a complex skill like designing is a matter of doing and becoming aware how to do it" (van Dooren, et al., 2013, p. 1). Stepping back and looking at the methodologies of different architectural studio's made me realize early on that awareness of how the architectural design process transcends the explicit structures.

Van Dooren calls it the five generic elements;

- experimenting or exploring and deciding;
- guiding theme or qualities;
- domains;
- frame of reference or library;
- laboratory or (visual) language.

Architectural design is not a one way street nor a specific route you can take to end up with a beautiful design. We all would agree, but strange enough it was after my first P4 presentation that I made the decision to change direction and work on a different building. This was not an easy process, especially knowing that I done the design process more then once still I made this error. But it taught me a life-long lesson when methodologies and structures crashed down around me; sometimes things do not work out the way I planned. Designing is indeed experimenting: a process of exploring and deciding, of trial-and-error (van Dooren, et al., 2013).

Also, this situation made me become more aware of the use of research results. The research results were not wrong, reflecting on it afterwards, I took the wrong building to translate my ideas best. In a comparable design assignment in the future I would choose the building more wisely.

## **2.3 It matters**

Transformation of cities and buildings is one of the main themes in architecture today. An appropriate balance between the old and the new is a fundamental interest for contemporary design in architecture. Heritage & Architecture is concerned with preservation and renewal in existing architecture. The research

by design concentrates on the architectural and technical aspects involved in the growing need for the conservation and transformation of buildings, including those of cultural significance. This graduation work is of scientific relevancy as it is touching upon the current problems with modern industrial heritage sites. In the near future more sites will be released as the sustainable transformation and digitalization in current society progresses. Some call this progression the third industrial revolution (J. Rifkin, 2011). This creates two inevitable problems. These sites need to transform or they are lost, because their expertise is not needed anymore, and the second problem is that these buildings need to transform to higher ecological standards, which is called sustainable transformation.

The challenge presents itself in the improvement of existing buildings. In the dictate 'High-tech, Low-tech, No-tech', Arjan Van Timmeren states that "approximately 40% of the existing buildings will remain standing over the next 40 years". Van Timmeren also cites Frei Otto with his view on new urban building plots as Otto said that "to build ecological means to not build at all ... it means urban reconstruction, the improvement of the existing building tissue and increasing the building density wherever possible" (Van Timmeren, 1999, p. 17). The question introduces itself how we should transform the existing stock to improve its performance? Uncertainty could mean erasing a piece of (non-) physical history and possible identity. Intervening in an existing building takes effort and a precise knowledge of the physical or non-physical values. If the two virtues, 'building a sustainable future' and 'preserving the history' collide, let's be certain to intervene in a proper way.

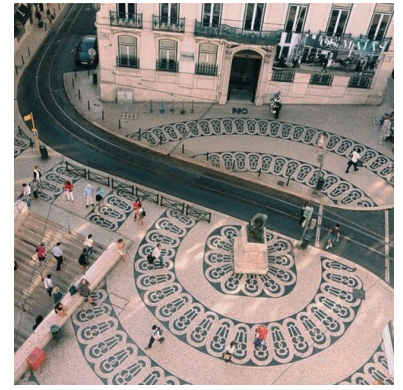
In relation to this context the research and the creative design done by the studio Heritage & Architecture is rather important and even necessary if we want to picture a future where the MMC, marked as industrial heritage, can keep their position in the urban tissue.

#### **2.4 Research creates certainty**

The school is situated in the Milling factory of the MMC. If we talk about the production process of the MMC, the milling factory was the most important building. This is where wheat was being milled to flour for other production processes. For example to make; bread, cake, pastries, cookies and pasta. In a cooking school the same process is present to create an enormous variety of food. Because of this resemblance in action and almost educational ideology, the choice to create the school in the Milling factory was plausible. But to make sure that the school was at the right spot and actually fitted the building a precedent study, a feasibility study and value assessment were decisive.

The precedent research was a study to get acquainted with the architectural and technical aspects of cooking schools. Also it gave me insights about the space (size/architectural) and the program necessary for 300 students. The feasibility study gave insights about the size and space of the Milling factory itself and when compared with the precedent study a correlation emerged about the new program, which was fundamental for the school.

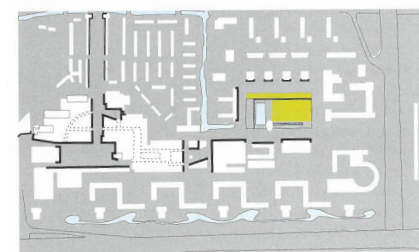
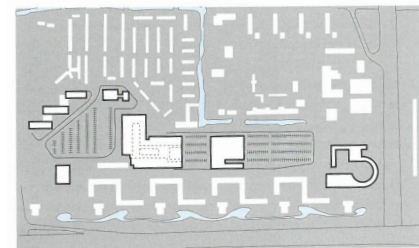
These conclusions interacted with the value assessment. In this context it is visible that research is indispensable. It created the framework of my position and the crucial arguments for the design.



De Placa dels Països  
Catalans in Barcelona. P.  
93. Meyer, H., de Jong, E.,  
Hoekstra, M.J. (2008). Het  
ontwerp van de openbare  
ruimte. Tweede druk.  
Uitgever: SUN, Amsterdam  
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Plein 1953 in Rotterdam  
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Amstelveen. P. 92. Meyer,  
H., de Jong, E., Hoekstra,  
M.J. (2008). Het ontwerp  
van de openbare ruimte.  
Tweede druk. Uitgever:  
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**Figure 5:** The proposed masterplan and the new zoning to reorganize Beato. The picture displays the general concept of the two urban street typologies and the typical public space in Lisbon.  
Source: work of author and unknown (right corner)

### 3. Results of research and justification of the main interventions

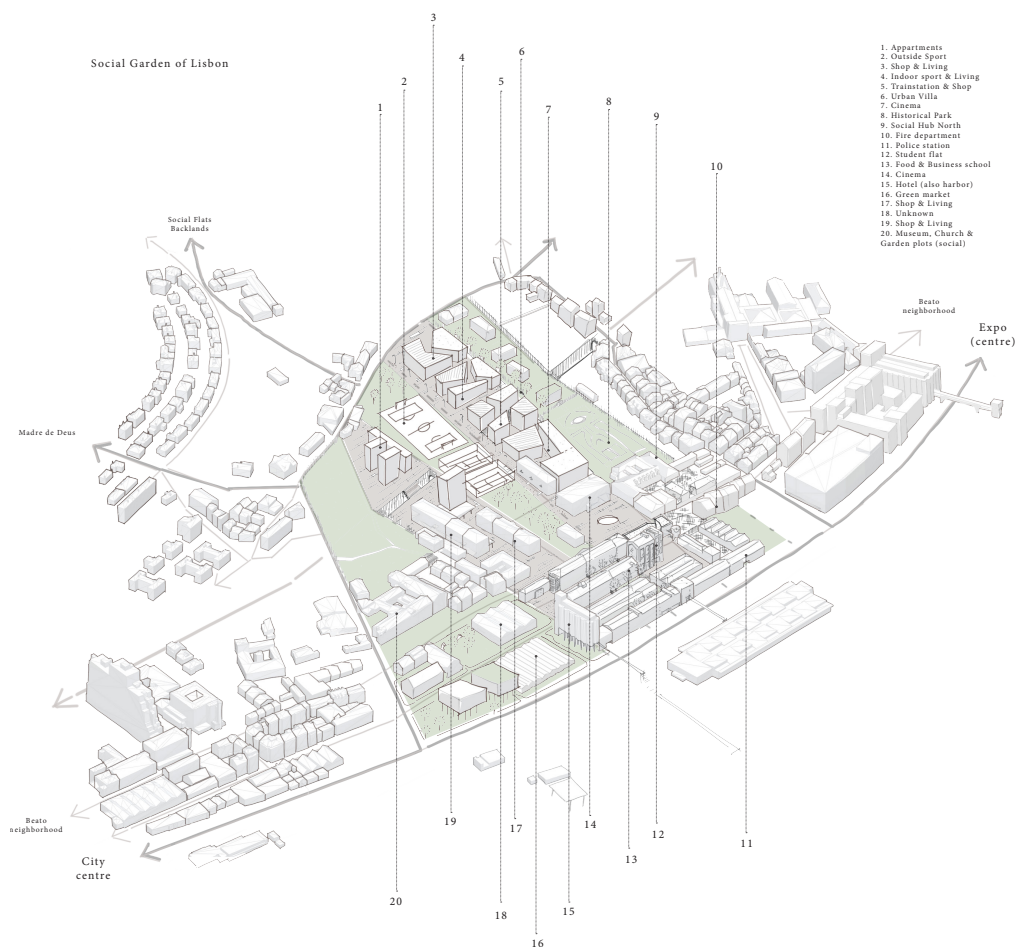
*The relationship between the theme of the graduation lab and the subject/case study chosen by the student within this framework (location/object).*

After seeing the rich cultural history of Beato and the contradiction in the current situation I proposed to continue the singularity of the MMC. In the following description I want to reflect on a few of the design choices I made where I think the most interesting layers come together. The results are thoroughly directed by the starting points from the transformation framework.

Research questions:

A. How can the ‘singularity’ of the industrial Manutenção Militar Complex (MMC) be preserved (kept) when disclosing the site to it’s context and make this ‘singularity’ tangible for the city of Lisbon?

B. How can the different buildings in the industrial Manutenção Militar Complex (MMC) be used for a new program without losing this ‘singularity’ of the industrial Manutenção Militar Complex?



**Figure 6:** The proposed masterplan, the new zones to reorganize Beato. The picture shows the general concept of the two urban street typologies.

Source: work of author

### **3.1 Interaction between city and building;**

The masterplan proposes to reorganize Beato because the MMC subdivides Beato as the new (food) centre between the city centre and the expo of 1998. In the masterplan the greenery (old royal garden) is restored and expanded as a new patchwork (layering). This layering is one of the design solution to create public space for the locals, and connect the neighborhood with the MMC from all sides. Especially the connection with the inner lands, behind the railway, as this is a problematic barrier. The layering can be justified as it is a result from the historic research which showed that the historic grid of 1856 was still present (but hidden) in the urban organization of the MMC.

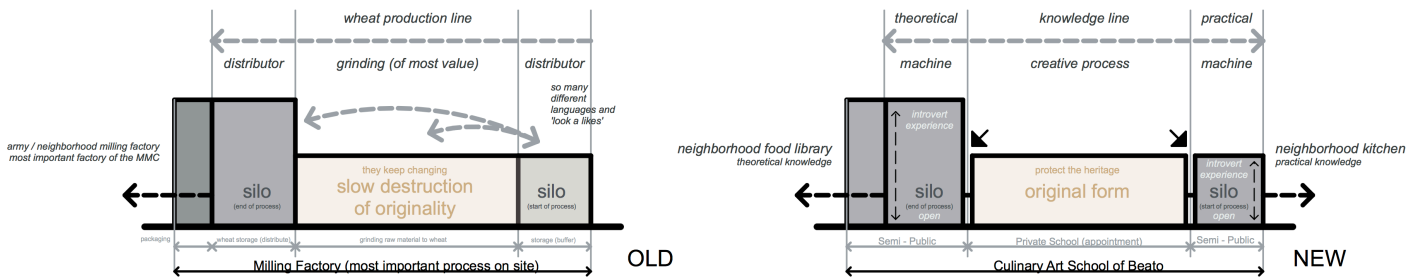
The proposition recognizes two urban languages. The greenery (green) and the stony (brown) language. The inspiration for these typologies came from the book 'Het ontwerp van de openbare ruimte' of Han Meyer and his companions. Especially the public spaces of the Placa dels Països Catalans in Barcelona and Plein 1953 in Rotterdam. The designs link with the design of Public space in the city centre of Lisbon. Huge squares that continues throughout a city part even if they are crossed by buildings, roads or street elements. Often decorated with the typical black cobblestone figures. It has to be noted that the green layer characterizes a rustic environment where locals can enjoy the surroundings. It can be a sanded square or even stone squares or paths. The goal is to create two distinct street typologies. The historic layer (new) continues all the way, crossing the MMC, to the speed way at the coast of Lisbon. This is the barrier between the harbor and the city centre and is most likely to stay there. At the scale level of the site, where the Culinary Art school is located, you can see a distinct difference of street typologies (figure 2). Again, this is a proposition; the layer can have a variety of typologies within itself. The essence is to connect the area and the MMC with its surroundings.

The public space around the cooking school is unique, because it was build for the production process and was private for the locals (military zones). Originally it is reclaimed river area. In the future it will be open for public so right now it lacks the human scale (see figure 1). To bring the human scale into the public space between the MMC buildings I suggest to divide the public space in a patchwork of different stone textures (same color, but different patterns). This form of dividing public space is a typical design gesture for public space in Lisbon.

The buildings of the MMC have the opportunity to use one of the street typologies to interact with the city. For example; the school is interwoven with the public space by its entrances and the two silo buildings. These buildings contain public spaces inside (kitchen of Beato and food library of Beato).

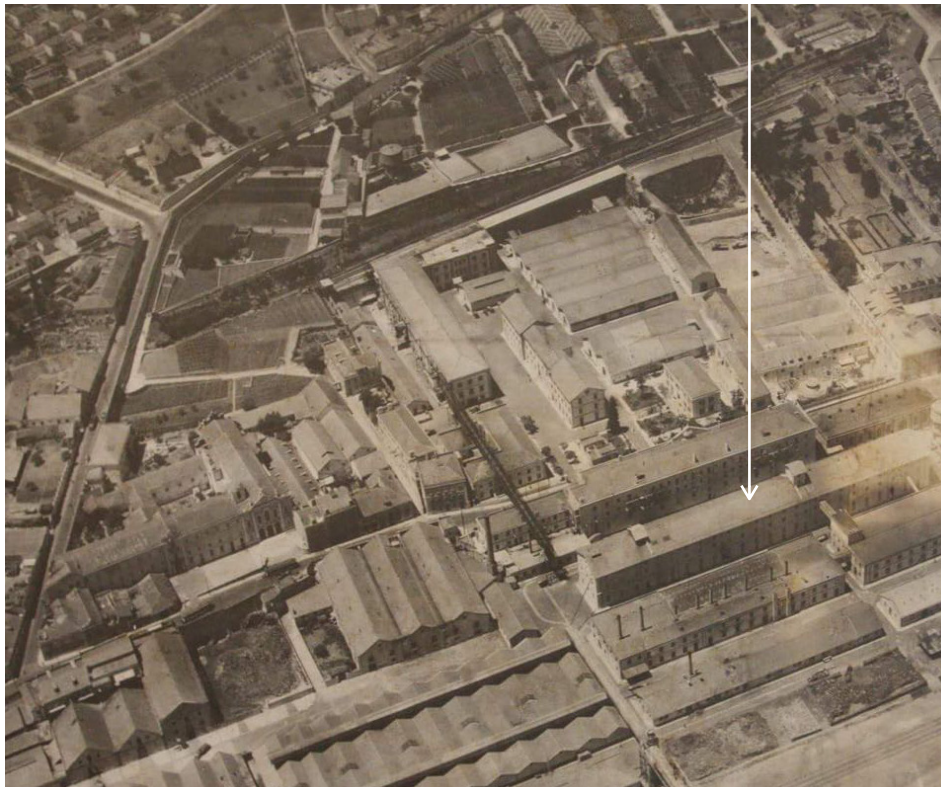
### 3.3 History of development as input for design;

Research and historic (architectural & cultural) analyses showed that the Milling factory was alternated to build the silo's for distribution of the raw wheat. Due to this intervention the building contains a chaotic/variety of architectural expression on the in- and outside of the building. Knowing the (architectural, technical and cultural) values of the skin and the finishes inside the building, the intervention proposes to reorganize the appearance, by isolating the original part of the building, and treating the silo's the same. See figure 7 and figure 8 for additional information.



**Figure 7:** The proposed idea on how to bring order with the intervention. The picture shows the general concept of the old and the new situation.

Source: work of author

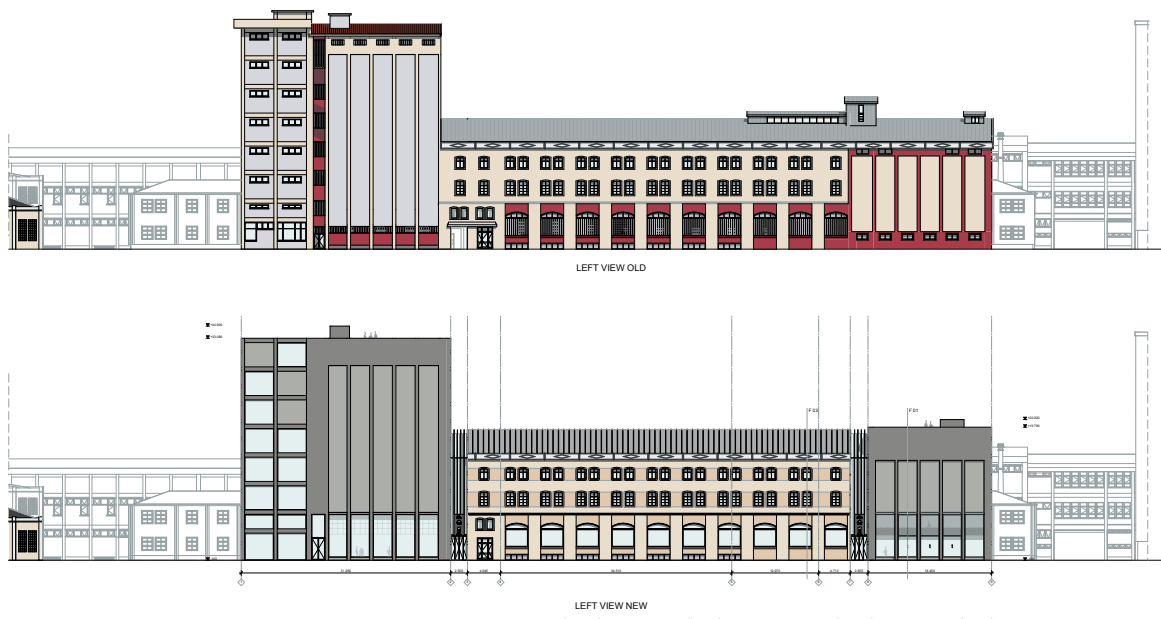


**Figure 8:** The original form of the milling factory. The image shows the milling factory in 1911 before all the later interventions.

Source: unknown

### 3.2 Two facility cores as new intervention;

Designed for an educational purpose extra facilities were necessary like toilets, food storage (room temperature & cold) at each level, and technical space for climate control and ventilation. On top of that, the school needed vertical transportation like stairs and elevators. Together with the results from the value assessment, educational program and the analyses of the elevations, the intervention proposes to create an opening between the different buildings. These openings will also function as the main entrances of the school. Historic analyses showed that people would enter the building from the sides for effective orientation.



**Figure 9:** The proposed reorganization, facades of the old & new design. The picture shows the general concept by isolating the original part and give the silo's an identical expression.  
Source: work of author

### 3.4 Experiencing the characteristics of the buildings itself;

The goals of the interventions are purely needed or to show the unique characteristics of the existing building. For example; the silo's with the kitchen cabinets (practical food knowledge) was perfectly suited for this function. The introverted character is kept on specific levels for practical studies, whereas the ground floor and first floor are opened up to show the silo's (function and form) from the outside. The same principal is implemented at the silo's of the library (theoretical food knowledge) except for the two inner rows. The library needed more space as it didn't suit small cabinets. Together with the desire to experience the vertical height (form) of the silo's the proposition is to create a cave shape that shows the majestic appearance of the silo's. Meanwhile you experience the library (theoretical knowledge) itself. References and inspiration to give form to this idea are; Musashino Art University Museum & Library and the cooking library of Blacksheep in Seoul, South Korea.



**Figure 10:** The first impression of the silo's, the potential of a beautiful library by cutting a way through the silo's.  
Source: work of author

### 3.5 'Machine' history of Milling factory as input for design;

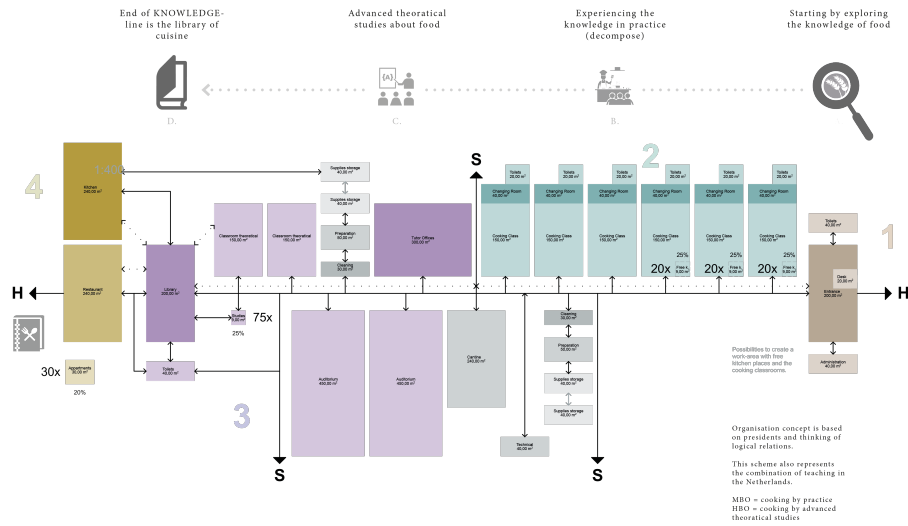
When designing the program for the cooking school a lot of precedent buildings taught the basic understanding of a cooking school. For example; The cookingschool in an old slaughterhouse of Gracia Studio in Tijuana, Mexico and the cookingschool of Sol89 in Cádiz, Spain. Both references taught me the basic understanding of a cooking school.

The Milling factory itself is in essence an machine created for grinding grain to powder. Since this is a linear proces that can be used to support the educational curriculum of the school it would be beneficial to use part of the machines.

But not only the old machines in physical form can be used. The idea behind the proposition for the new school is to design a new machine (read; functioning) scheme to make the rich history of the milling factory tangible for the students. I reflected on three functional schemes to give the new cooking school a new linear proces; the cooking line, the knowledge line and the student line. As the words impley, all three functional schemes have a unique subject which is made linear. The cooking proces, the cooking knowledge or the cooking students themselves. The differences present themself in theoratical and practical functioning of the school. See figure 11 for an impression of the knowledge scheme.

The knowledge scheme is the first idea for a functional plan of the school. The basic idea is that the student starts with a level of knowledge. The students then start to learn practical knowledge of cooking (how to cook) and end up in advanced theoratical knowledge about food (why to cook). Both practical and theoratical knowledge are then stored in form of books, new ingredients etc. in a cooking library which the city of Lisbon can use.

In the proposition it is possible to recognize the practical and theoretical knowledge when you look at the silo's. The school is in-between these silo's. Acting as the supervisor of the students when they walk from silo to silo, to be better chefs. Just like the grain was grinded while moving between the silo's, the students are too. See figure 12 and figure 13 for final impressions of the design.



**Figure 11:** The knowledge line as linear program in a functional scheme. Functional proposition that is used for the design of the cooking school.  
Source: work of author



**Figure 11:** Long section of the milling factory. The practical knowledge is situated in the right silo's and the theoretical knowledge is situated in the left silo's.  
Source: work of author

## 4. Future elaboration

*Student has to look ahead and describe how the final part of the graduation period will be filled in.*

Between the p4 - p5 there are a certain subjects I want to elaborate or produce the following;

1. Creating a (half) model of the proposed design, with some of the public space around the school.
2. Designing the central kitchen with the auditoriums in 3D.
3. Elaborating more on the interaction between the school and the city. How can the school serve the city and the other way around.
4. Study literature about food to make an interesting introduction (p5) and position this graduation project in relation to literature.
5. Cinema-graphs (moving images) about the building.
6. Small intro movie about the Culinary Art school of Beato (like location; program; showing the qualities)
7. Revising all the products and make them more coherent.

## 5. Conclusions

The Culinary Art school improves the prospect of Beato and the MMC as a current vacant facility. Whereas the neighborhood Beato will regain its hidden and rich culture. The school is the centrum and Kickstarter to reorganize Beato and connect the MMC with all sides. The methodology is in accordance with the methodical approach of the Heritage & Graduation studio. An important reflection point is that designing is more than following a method. Being aware of the steps in the design process is essential for recovering from a trial and error; as I learned from my design. I could not have overcome this error without a distinct understanding of the design process.

Furthermore, the methodology is clear as it specifically focusses on finding the narratives (what) and creating the arguments (why) for the intervention. The narratives are usually related to architectural history. The arguments (why) for the intervention are found in the research. The coherency through all levels of scale is difficult to establish. But when the narrative (read: guiding theme) correlates with the urban scale as well as detail scale a design scenario is established. I also became aware that the transformation of cities and buildings is one of the main themes in architecture today and therefore this research matters. The ecological transformation and digitalization in our era will expel more industrial sites. In relation to this context the research and the creative design done by the studio Heritage & Architecture is rather important and even necessary if we want to picture a future where industrial sites, like the MMC, can keep their position in the urban tissue. We need certainty to transform these vacant buildings properly. Research creates this certainty in our design choices. The example and correlation of different studies showed the influence of research in my design. Research as an input for the design. Rich description are seen in chapters 3.2 and 3.5 where it is visible how social/cultural history research is input for the design proposition.

Lastly, the main interventions were explained and this reflection displays how the interventions are justified. Mainly by creating a transformation framework with the value assessment (assessment of important historic layers/

elements) we can intervene with certainty. Without destroying the singularity of, in this case, the military milling factory.



**Figure 13:** Final impressions of the master plan of Beato and the new Culinary Art School of Beato in the re-used Military Milling factory.  
Source: work of author

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