The origins of the “Leões” flour and pasta factory. The present of the Arts and Architecture School of the University of Évora (Portugal)

Los orígenes de la fábrica de harina y pasta “Leões”. El presente de la Escuela de Arte y Arquitectura de la Universidad de Évora

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Abstract

The Leões flour and pasta factory, which was one of the most important factories of the Alentejo, is a typical example of the European milling factories which emerged in 19th-century Europe. It was one of the 31 modern factories built in the districts of Beja, Évora and Portalegre between the late 19th century and the 1930s. It was established in 1916 in Évora. In 1993, the factory’s lack of competitiveness led to its closure and, after a few years of neglect, in 1998, the University of Évora, following the example of other universities, acquired the building so it would accommodate the Arts and Architecture School.

The search of the origins of the factory was one of the main objectives of the researchers who were working about this field. However, it was not available the original process of the industry which would help to examine this study case completely, still now. In this paper we intend to analyse firstly, the origins of the Leões factory and its technical and architectural characteristics, and secondly, the renovation of the building as the Arts and Architecture School of the University of Évora.

Key words: Leões flour and pasta factory; Évora (Portugal); industrial heritage; adaptive reuse.

Resumen

La fábrica de harina y pasta Leões, que fue una de las empresas más importantes del Alentejo, es un ejemplo típico de las fábricas de molienda europeas que surgieron en la Europa del siglo XIX. Fue una de las 31 fábricas modernas construidas en los distritos de Beja, Évora y Portalegre entre finales del siglo XIX y la década de 1930. Fue construida en 1916 en Évora. En 1993, la falta de competitividad de la fábrica llevó a su cierre y, después de algunos años de abandono, en 1998, la Universidad de Évora, siguiendo el ejemplo de otras universidades, adquirió el edificio para que pudiera albergar la Escuela de Arte y Arquitectura.

La búsqueda de los orígenes de la fábrica ha sido uno de los principales objetivos de los investigadores que trabajaban en este campo. Sin embargo, todavía no estaba disponible el material que ayudase a examinar este caso de estudio por completo. En este artículo pretendemos analizar en primer lugar, los orígenes de la fábrica de Leões y sus características técnicas y arquitectónicas, y en segundo lugar, la renovación del edificio como la Escuela de Artes y Arquitectura de la Universidad de Évora.

Palabras clave: Leões flour and pasta factory; Évora (Portugal); Patrimonio Industrial; Rehabilitación.
The Leões factory: New research findings about its origin

There have been published a rage number of articles or book chapter about the Leões factory since it was bought by the University of Évora in 1998. The flour mill, which was one of the most important factories of the Alentejo, entailed, on the one hand, a significant transformation of the landscape and, on the other hand, the emergence of flour mill plants which introduced the Austro-Hungarian system.

Leões was more than an industrial complex. It had a commanding presence in the skyline of the city. It built a new neighbourhood around it outside the city wall where lived the people who worked there. It was such a strong symbol for the inhabitants of the city that nowadays it is still called Leões when you want to talk about the arts and Architecture School of the University of Évora.

The search of the origins of the factory was one of the main objectives of the researchers who were working about this field. However, there were just a few bibliography, old photos (really important to know the appearance inside and outside the building), historical publications... but there was not the original process of the industry which would help to analyse this file, still now.

The Leões flour and pasta factory was established in 1916 in Évora by Sociedade Alentejana de Moagens, a capitalist enterprise founded by several agriculture entrepreneurs from the city with the purpose of diversifying their businesses by taking advantage of the cereal regime. It integrated the most modern industrial park that existed in the region at the time and it was installed closed to the wall of the city and to the railway line.

In 1920, Eugénio Alvarez took the control of the factory. He promoted the capital of Leões to 800 contos (800,000$00 escudos) and betting on the modernization with recourse to technology from countries such as Switzerland.

Although we have the original process of the industry, it has no information about the design of original factory. The original documentation reports the characteristics of the factory since 1923: on May 17th an application authorization was entered to the services of the 4th Industrial District. It was requested the license to build a bakery and a flour division in the Leões factory.

The designers of the project were Durán, Garcia & Cª Engenheiros, from Lisbon, was a specialised business in the study and execution of power stations, hydraulic plants, flour and past factories; mechanical bakeries, chocolatefactories, sweet shops and biscuits factories, etc.

As we can see in the figure 1, it was not just a building, it was planned as an industrial complex compounded by: flour mill, silos, warehouse, oil engine house, house repair, pasta factory, bakery, garage, a water tank to cool the engine and the bakery workers houses which were situated in the other side of the factory buildings.

The primitive building was the flour mill and the warehouse.

1. Before finding the original process of the industry, this article improves and disseminates our last research findings. A previous version in Spanish was: Matos, Quintas, Palomares, “La rehabilitación de la fábrica de massas Leões...”, 2017.


3. At the end of the 19th century, Portugal, as well as other European countries, implemented a protectionist policy aimed at both raising custom duties and protecting grain crops, especially wheat. This grain protectionism began to emerge in the 1880s, marking a transition from a free market to a more closed one. The measures implemented over the preceding ten years, focusing especially on the role played by the flour mill plants, establishing that, before purchasing the more precious and lucrative exotic wheat, they first had to buy domestic wheat in nearly double the proportion. This measure ensured the flow of Portuguese wheat, reducing imports, and thus balancing the trade balance. All these developments allowed Alentejo to become one of the top cereal-producing regions thanks to its extensive territory, which was characterised by a predominance of large estates and whose potential was still mostly untapped. Reis “A ‘Lei da Fome’: as origens do protec- cionismo cerealfíco...”, 745-793.

4. In the region, this incorporation of a public limited company by major landholders was not an exception, but rather quite usual, as there was a number of other companies that were incorporated at the time, such as Companhia Elvense de Moagens a Vapor, founded in Elvas, in 1889, Sociedade de Moinhos de Santa Iria, founded in Beja, in 1890, or Sociedade Fabril Alentejana Limitada, founded in Vila Viçosa, in 1921, to mention just a few. Guimarães, Elites e Indústria no Alentejo (1890-1960), 99,100, 178; Quintas, “A fábrica e a sociedade Sofal de...”, 221-245.
5 The Historic centre of Evora has been a World Heritage Site since 1986.

6 In 1918, in order to distribute the flour, it produced, the factory built a railway branch that connected it to the Barreiro-Mora branch, allowing the company to receive and ship goods from and to both the capital and the Northwest border.

7 Guimarães, Elites e Indústria no Alentejo (1890-1960), 119.

8 Direcção Regional da Economia de Évora, Processos de licenciamento, cancelados, Processo nº 40, referente a uma Fábrica de Panificação e Moagem de Cereais ao sítio dos Leões em Évora, da Sociedade de Moagem Alentejana Lda.

9 Decreto 8364 de 25 de Agosto de 1922 referente às Indústrias Insalubres, Incómodas, Perigosas ou Tóxicas.

10 “Especializados no estudo e execução de centrais eléctricas, térmicas ou hidráulicas, fábricas de moagem e massas alimentícias; padarias mecânicas, fábricas de chocolate, confetaria, bolachas, etc”. A Contemporânea nº 3 (1922); 3. Also, they were agents of various brand machinery and electric materials.

Figure 1. “Planta geral do terreno e suas edificações”. Escala 1:1000. May 1923. Source: Direcção Regional da Economia de Évora, Processos de licenciamento, cancelados, Processo nº 40, referente a uma Fábrica de Panificação e Moagem de Cereais ao sítio dos Leões em Évora, da Sociedade de Moagem Alentejana Lda.

It is described that the flour mill has three floors\(^{11}\) whose machinery was distributed in this way: on the first floor, there were a line of 4-cylinder mills “diagonal type”, for grinding the cereal, in the second floor the cleaning machines, and in third floor, the plansichters, for sifting.

The driving force was provided by a steam generator with a 0.25m\(^2\) grid surface and 10kg pressure, built by “Marcelino Arnaiz house” in Bilbao, Spain. Besides that, there were two electric motors, both of German origin (8 and of 3.2Cv). There were five workers.

Although it was supposed that it started using electricity since the beginning, becoming the largest flour production hub in the city, competing with those located both in the district of Évora and in the rest of the region, our last research findings show that firstly, it started using steam.

In fact, in the figure 1 we can see the design of a chimney.

![Figure 1: Planta geral do terreno e suas edificações](image)

The Leões factory was built gradually, according to the economic means of the capitalist enterprise that was running it and in different stages while the company diversified and increased its production.

In 1926 it was inaugurated the pasta section (with a capacity of 8,000 kg of pasta, every 10 hours) where were installed modern manufacturing systems such as “Trabatti and “Barducci”.

In 1944 developed its first major modification in the flour mill: On the first floor of the flour mill were installed to produce spun flour, 11 cylinders Davério “Diagonal” type and the plansichter of the third floor were replaced by 11 more modern ones also of the brand Davério.

At this time, the factory has already installed a power station powered by the U.E.L, whose cabin had 2 transformers of 225Kva. Its power was increased with resources of 2 diesel engines S.M.L. of German origin with power of 350 horses each, an alternator of 125 Kw for driving force and illumination and still an electric motor of 20 Cv. for cleaning silos.
It was one of the flour milling plants whose operation was based on the modern production systems that emerged in the 19th century and were constantly being perfected: the Austro-Hungarian flour milling system. This system replaced stone mills with metal cylinders, which produced very fine flour by transforming the part of the wheat grain known as endosperm. The production of flour was based on a vertical system that extended the various initial stages with the following procedures: controlled heating and cooling of the grain; compression; opening and grinding; flour compression; flour bagging, etc.

Usually, when it came to installing a system of this magnitude, it was necessary, not only to have plenty of capital to invest and a great technical know-how, but also to build large multi-storey buildings to install the various machines that, integrated into a vertical production system, would produce flour. These large pieces of equipment required a significant structural resistance that was only possible to achieve thanks to the introduction of new construction materials, such as reinforced concrete and iron. In addition, the need for great availability of energy caused some flour mill plants to use, initially, steam energy and, later on, electricity.

A factory as large as this one, which produced various tonnes of flour a day, completely outperformed any factory based on old, low-profit production systems, which is why windmills, treadmills, or watermills were not able to compete with these new companies and gradually closed down.

The fact that the work of the factory was carried out mainly during the daytime allowed the power plant at night to supply the nearby Tenente Pereira neighbourhood, which was largely inhabited by its workers.

In 1955 it was built a silo with 15 cylindrical cells arranged in three rows for storing the wheat that was received, the wheat that had been cleaned and weighted, and the flour that was being produced. It was designed by Construções Técnicas, Lda.

In 1972 it was installed a cake shop and the following years the storage system of the factory was expanded as we can see in different projects. The designer was Braivanti (Milano, Italy). The new warehouse enlargement had capacity of 800 tons of breadmaking flour distributed in 10 sealed and closed concrete cells and 9 metal cells for meal intended for pasta with capacity of 720m³.

Figure 2. “Planta geral do terreno e suas edificações”. Esca a 1:1000. 1977. Source: Direcção Regional da Economia de Évora, Processos de licenciamento, cancelados, Processo nº 40, referente a uma Fábrica de Panificação e Moagem de Cereais ao sítio dos Leões em Évora, da Sociedade de Moagem Alentejana Lda.
The mass section received a new production line at high temperature which introduced in 1977 a fuel oil engine to overheat water, reinforcing the other three situated in the power station.

The Leões factory operated uninterruptedly between 1916 and 1993 when, as a result of the political and economic changes occurred after the Revolution of April 25, 1974 and Portugal’s entry into the European Economic Community (EEC) –which dictated the end of the State’s protectionism and the opening up of the European market–, it was impossible for most Portuguese manufacturing units in the wheat processing sector to survive, due to the loss of competitiveness of an ageing industrial park, and the factory was forced to shut down.

There are different factors that show the importance of the Leões factory within the scope of Alentejo’s industrial heritage. First of all, it was part of the flour industry, which was one of the sectors that led the industrialization of Alentejo from the second half of the 19th century onwards, together with the modernization of the textile industry, the development of the mining industry, or the transformation of cork.
These sectors were joined in the following century by the extraction and transformation of marble, fuel refining, and car assembly. Secondly, because this industrial heritage is still alive, as unlike other flour mill plants that after shutting down were abandoned and experienced an accelerated degradation, the Leões factory was purchased in 1998 to be renovated and transformed in order to accommodate some of the facilities of the University of Évora and is currently enjoyed by both its users and the community that surrounds it.

The Arts and Architecture School of the University of Évora (Portugal)\textsuperscript{12}

After purchasing the Leões factory, the University of Évora launched a restricted invitation to tender in 2006—“Limited Invitation to Tender by Pre-Qualification no. 2 /UNIV.ÉVORA/2006” for the Rehabilitation of the Old Leões Factory-Visual Arts and Architecture Complex-University of Évora\textsuperscript{13} in which the following architecture teams took part: “CIVI4 -Projectistas e Consultores de Engenharia Civil, Lda.”; “Teresa Novais & Jorge Carvalho -Arquitectos Lda. (aNCArquitectos) and Newton Consultores de Engenharia, Lda.”; “Atelier 15, Arquitectura, Lda.”; “Filipe Oliveira Dias, Arquitecto, Lda.”; “Atelier de Santos, Arquitectura, Lda. And Tecnopert, Projectos e Planeamento, Lda.”, and “Inês Lobo Arquitectos and Ventura Trindade Arquitectos”.

The latter, i.e., the team formed by Inês Lobo and Ventura Trindade Arquitectos was the winning team and, with their intervention, they tried to restore the original character of the existing structure, which defined the factory with all its austerity, recovering its original simplicity.

The Architecture and Visual Arts Complex of the University of Évora opened its doors on November 2, 2008, and offers Sculpture, Visual Arts, Painting, Design, Architecture, and Multimedia courses.\textsuperscript{14} The architectural intervention won the “2013 IHRU Award. Rehabilitation of Urban Complex”.\textsuperscript{15}

The factory, which originally consisted of a multi-storey building with a silo on each side, increased its surface with different modules arranged in a U-shape around a manoeuvring yard, which is currently a large garden similar to the ones found in large university campuses, in which the reinforced concrete silos converge with the multi-storey factory structure and other industrial elements.

In the programme of the invitation to tender, the University proposed the preservation of the complex’s markedly industrial character, but considered that there was the need to demolish two of the existing modules (where the library and the Performing Arts course are now accommodated).

The architects who won the tender found the Leões factory empty, with no pieces of machinery inside, and proposed a number of changes to the university, namely preserving the buildings that were intended to be demolished, renovating them, and including them in the new programme.

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\textsuperscript{12} Our special thanks to João Ventura for giving an interview to Sheila Palomares Alarcón on May 5th, 2015, in the Architecture and Visual Arts Complex of the University of Évora.

\textsuperscript{13} Archivo de obras de la Universidad de Évora. Expediente: Leões.

\textsuperscript{14} Portugal, O livro dos Leões, 14.

The construction works were carried out in two phases; the first one was focused on the construction of the architecture and visual arts module, and the second one covered all the support or shared buildings, such as the library, the cafeterias, the workshops, or the porch. The plans for a third phase aimed at renovating the module intended to accommodate the Performing Arts department are yet to be implemented, as is the landscaping project, in which the architects designed the 4 accesses to the complex, which defined 3 entrances to parking areas, plus a pedestrian access, the main one, which led passers-by or students into the complex through an exhibition area that is yet to be built.

The architectural intervention was based on several key premises: on the one hand, the conceptual design ideas by means of which the architects intended to translate the memory of the factory and the machinery that had occupied its old facilities into the present using a contemporary language; on the other hand, according to the building use programme, creating a connection between the different modules of a complex that had grown according to economic and industrial needs and without continuity, as there was no common element to connect the different units (the reason why the large porch and cafeteria were designed).
Furthermore, they had to work with economic pragmatism (a budget of 500 €/m²) on a tight deadline, as there were only two years to complete the project and the first construction phase.

In order to consistently implement the main objectives of the project, they carried out a detailed study of the history of the factory, its structure, and materiality, so they could decide on the best way to allocate new uses according to the conditions of the different buildings and enhance the integrity of the manufacturing complex.

They decided to replace the structure intended to accommodate the Visual Arts School by a new building, because it was in a very poor state of repair and had only replicas of the original elements; on the other hand, they decided to renovate the building that accommodates the Architecture department, preserving its integrity while adding the necessary infrastructures and reorganizing the space. There was an emphasis on outdoor areas, namely on the courtyard, which is a space that allows the students to travel between different modules and has become a multi-purpose connection area.
The architects were inspired by “all that was new” in the factory and that did not belong to the original multi-storey building, such as the railway platform, the canopies, pieces of machinery, facilities, etc. to design new elements made of steel.

That is the reason why this material is found in all the new structures, the porch, or the cafeteria. Similarly, the installations are visible to recall all the machinery that used to be found inside the factory, giving the complex a strong industrial character.

However, despite the fact that the structure of the Leões Factory has been preserved, as in other interventions in buildings associated with our industrial heritage, the same did not happen with its memory, as there are no references to its glorious past as one of the largest industrial complexes in Alentejo. The Leões flour and pasta factory is a typical example...
Conclusions

of the European milling factories which emerged in 19th-century Europe. It was one of the 31 modern factories built in Alentejo (districts of Beja, Évora and Portalegre) between the late 19th century and the 1930s. This modern system consisted of a high-rise construction with at least three floors built to accommodate all the necessary machinery.

This system, known as the “Austro-Hungarian System”, was characterised by the use of cylinder gravity milling, sieving plans and steam and/or power motors. Interestingly, in Portugal, the system was rarely provided and assembled by a single company. Instead, the machinery was imported from different sources and was often second-hand. In Alentejo, largely until the 1940s, a significant number of the milling factories were put together by “Bühler and Hermanos”, a subsidiary of the Swiss company Bühler based in Madrid.

Studying this factory allows obtaining important data to understand the development of the flour industry in the Alentejo region. Its historical importance, the role it played in the region’s economy, the mark it left in the urban fabric of the city of Évora, and the reference that its products were at both the local and the national levels alone are aspects that justify its value as heritage. To these we should add the impact it had on the local population that was directly or indirectly connected to this factory, because those who didn’t work there had relatives or acquaintances who did, and that is the reason why the Leões factory is part of their memories.

After years of neglect, reusing this building as a university centre allowed it to be preserved and given new life. The intervention carried out in this building tried to preserve important aspects of its architecture; however, due to the lack of contextualization of the building in what regards the region and various historical periods, it failed to preserve its historical memory, an aspect that should be covered in a future intervention.

At the end of our research work, we can conclude by saying that some of the architectural heritage that is currently more neglected is of industrial origin, as it is associated with the economic activity and, therefore, reflects the evolution of companies that are created, developed, expanded, and sometimes disappear; interventions like this one encourage us to think that there will be fewer and fewer examples of buildings and complexes that are lost along the way.

However, there is the need to establish clear intervention criteria, as well as a protection, enhancement, and dissemination policy that takes into account, not only architectural aspects, but also the various historical, technological, and territorial contexts, to enable a comprehensive and integrated understanding of the buildings. Furthermore, there is the need to find ways of preserving memory and raising the population’s awareness through education, in order to promote its engagement with this heritage.
- Boletim da Federação Nacional dos Industriais de Moagem para 1941, estatística.

Sources


Photographic archive Câmara Municipal de Évora: Leões.

Archive de obras de la Universidad de Évora.