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Urban Layout Around Markets Built of Iron in the 19th And 20th Centuries: A Current Consequence of their Location Sites in Castilla & León, Spain

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Abstract. Detailed studies have been carried out for decades on the iron markets built in Spain from the late 19th century to the early 20th century. However, until now they have been approached from a historical-artistic perspective. The focus of these studies lies mainly in their contextualization and description, in the use of iron as a novel material and in characterizing their typology and morphology. This research addresses a new line of investigation, evaluating the impact of these singular architectures on the consolidated fabric of the cities where they were implanted. The studio has been focused on the territory of Castilla y León (Spain), because it has many cases that can be studied regarding location of their markets. The criteria analyzed to establish the impact of these constructions on the urban fabric refer to the permanence of the original constructions and use conditions, the type of location and the characteristics of the place. The results show similarities in terms of the characteristics of the chosen plots, with the squares or squares prevailing over the plots between party walls, as well as in economic and functional aspects considered when choosing them, seeking large and airy spaces. It can be concluded that these centuries-old landmarks, both those that remain unchanged, as well as those that were demolished or replaced by other buildings have had an impact on the urban context of these cities in a very significant way. They have managed, not only to modify the urban layout of representative and practically consolidated areas of the historic quarters, but have also managed that its urban configuration lasts until today, despite the difficulties, narrowness and limitations in the current traffic that its existence causes.

1. Introduction

In the early twentieth century, in the Europe wake, Spain's Central markets was the most important commercial buildings within a town, having a prominent place within the social and architectural context. Thus, it is not surprising that there are numerous scientific studies available that provide valuable information about most of the markets built in many Spanish cities [1].

It is worth recording that these iron markets replaced the "free" and "open" market exchange, located in the central squares and streets of the cities. According to Stobart and Damme, markets and cities are closely entangled concepts, especially in urban history, where their relationship is often considered self-evident, to the point that it goes unquestionable [2]. In this same line are expressed Oyón and Guardia,



for whom, very often, the markets contributed to shape the urban morphology of the medieval and premodern city [3].

In spite of the massive amount of information and reference which there are about the markets location, urban land impact has been analyzed in very few cases [4]. The lack of studies on this issue is strange, if it takes into account that the choice of location was the first of many important problems that had to be faced, both by the architects of the projects and the authorities and agencies responsible for promoting the market building. It cannot be ignored that the size of these "colossi" of the 19th century, regardless of their layout, needed large squares, which had to be located in central areas, within the city centers, where there was a high density of population. Moreover, markets were more than buildings, because they took the surrounding public spaces with outdoor market stalls, carts, etc., (figure 1) so that there was a connection between these spaces and buildings markets, which became their prolongation with architectural form.



Figure 1. Market “del Val” of Valladolid, (upper left). Market of Burgos (upper right). Market of Soria (lower left). Market of Zamora (lower right). Pictures taken at early 20th century. Sources: Municipal Archive of Valladolid, Municipal Archive of Burgos.

Faced with this situation, present research objectives are focused on learning the impact that the markets had on the current shapes of our cities. In this first study the area in question will be limited to the Spanish Autonomous Community of Castilla y León, intending to continue our research nationwide. This choice is justified because, despite the fact that at the end of the 19th century and the beginning of the 20th century, this territory was depressed and poor, with adverse socioeconomic conditions, it was an example of a struggle to improve the hygienic conditions of trade [6], building seven markets iron, between 1894 and 1912. Moreover, it is important to know that Castilla y León is the largest Spanish region, reaching 94,233 km² and is located inland, on the central plateau, in the northwest center of Spain. Its poor location put it at an economic disadvantage compared to other regions located on the coast [7]. It had a population density of 24.4 inhabitants/km², a much lower rate than the coastal regions and Madrid, which had double or triple that amount.

In addition, these markets were proud and stately buildings, and comparable to those that were built in other more important and fortunate cities of the country. Their iron structures were daring and followed the European and Spanish capitals models [8]. Furthermore, these public buildings had an

important social and urban impact, with consequences that extend to our days, as we will verify throughout this article.

To determine works scarcity on the urban impact of the Spain iron markets, a research on the existing information has been carried out. We have analyzed among the different sources found which have been the most frequent objectives in their studies. Regarding context and historical background, research focused mainly on the reason that led to their construction, as well as referring other markets that may have acted as models and their historical impact. With respect to their architectural style, as the exceptional characteristic of these types of buildings, it is worth noting that more than half of the previous references address their description, frequently examining their form and aesthetic qualities and relating them to the so-called cast-iron architecture. In this type of architecture, the markets were authentic urban representatives of modernity reflected in this material. They were a reflection of the eclectic style that emerged after the crisis of the concept of a single style in architecture, so prevalent in the nineteenth century. Within a more technical context, and without denying the central role of iron, many of the references cited also spell out the construction systems and their components. These systems came to constitute a new architectural and construction typology that was unique to and characteristic of these buildings, giving them an appearance that made them easily recognizable.

Also noteworthy are the studies on their recovery, rehabilitation or conservation, with several references on this topic. There are also references to the planning of the surrounding area, although these allusions are related to: 1) the urban configuration that the city had at the time of its construction and 2) the possible actions needed to prepare the land so that the market could be built.

2. Markets in Castilla y León (Spain)

It so happened that solving the public health problem of the itinerant markets scattered through the streets of the cities, through the application of the Royal Decree of January 20, 1834, which, among other aspects, aimed to ensure food hygiene and regulate the fairs and markets held in cities, coincided in time with the Industrial Revolution, which brought as a consequence the appearance of iron and its application in architecture and engineering.

Les Halles of Paris (1854) planned by the architects Baltard and Callet, built of iron and glass, formed the typological model of market par excellence in Europe, and was imitated in many places on the continent. Castilla y León came to have a central market made of iron in seven of its eight capitals: Valladolid (1878), Ávila (1893), Palencia (1895), Salamanca (1898), Burgos (1899), Zamora (1902), Soria (1912).

2.1. Valladolid 1878 [10]

Valladolid is a special and unique case: three markets were constructed at the same time, in three different locations. As can be seen in Figure 2, they were scattered throughout the town: *Val*, *Portugalete* and *Campillo de San Andrés* [11].

Regarding the current urban planning, as shown in Figure 2-a.2, the *Plaza del Val* still has the same shape, the one originally designed for the market building. In addition, it should be noted that although the building has been totally renovated, respecting its original volume and look, it is not considered a demolition. However, in the case of the *Portugalete* market, once the building disappeared, the city recovered an important pedestrian-leisure plaza open to the cathedral, as shown in Figure 2-b.2. For its part, the *Campillo de San Andrés* has returned to its origins after the disappearance of the market building; as can be seen clearly in Figure 2-c.2, the original square was recovered and now has two canopies that have recently been erected for street vending. For its part, the small plaza called *Red*, which was originally proposed, remains unchanged.

To build the *Val* market, as Figure 2. a.1. reveals, a specific area had to be carved out by demolishing a city block of houses that occupied 468 m² of land, which was expropriated to be able to join the *Malcocinado* square with that of *Val*, occupied by the former church of the same name, to successfully form a rectangular plaza of 5,700 m². *Campillo de San Andrés* and *Portugalete* markets, the latter erected on land that formerly was the river bed of the northern branch of the *Esgueva* river (Figure 2-b.1), were located on spaces that at that time were already consolidated squares of the city, so these sites, with surface areas of 4,560 m² and 6,750 m², respectively, disappeared as such after the construction of the markets.

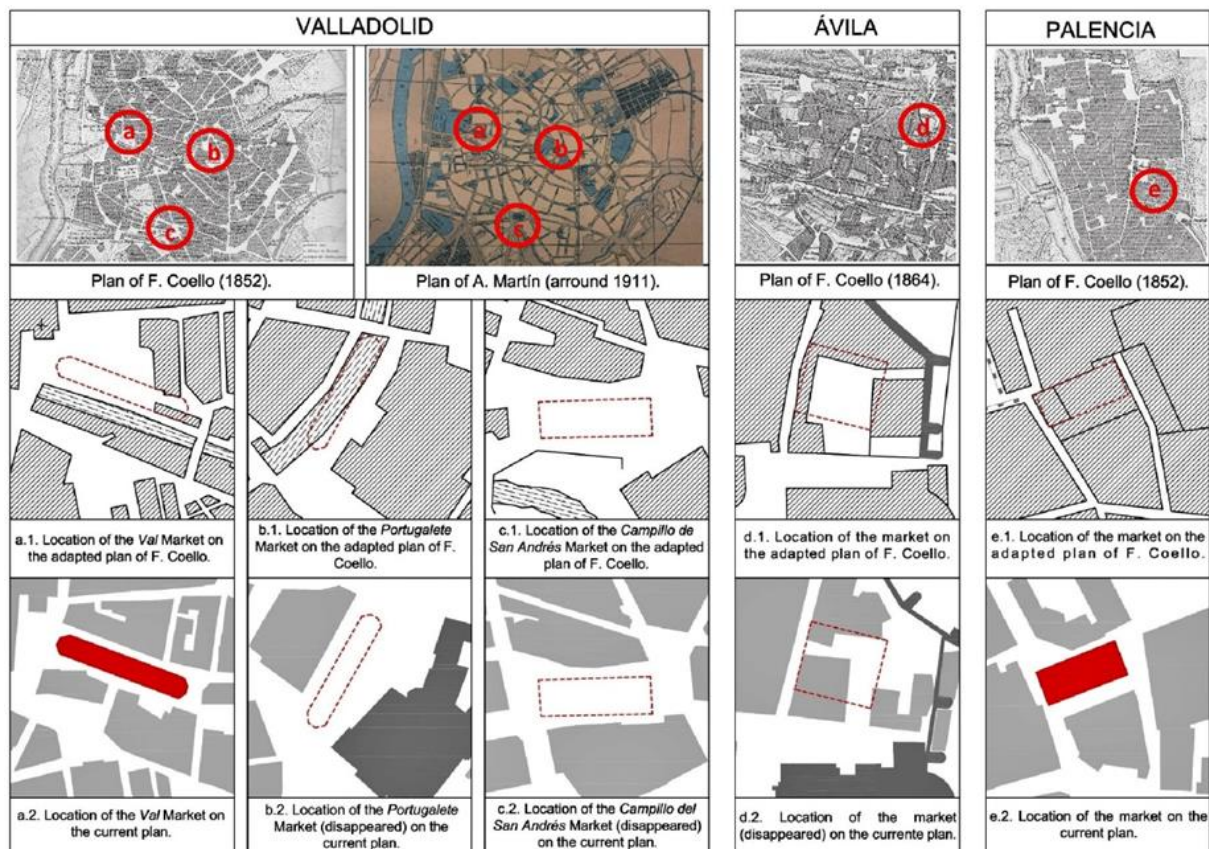


Figure 2. Comparative status of the market locations of Valladolid, Ávila and Palencia, Sources: Maps by F. Coello, A. Martín and the authors.

To choose the locations of the markets, in 1878 the City Council ordered the municipal architect, Juan Ruiz Sierra, to search for the most suitable sites, with the initial idea that they should be squares already existing in the city. To do so, the technician drew up a list of the twenty-eight squares and small squares (*plazuelas*) in the city, in which he described their shapes, surface areas and dimensions. The choice was then made by ruling out the unsuitable ones, taking into account the following aspects: whether the square already had a certain purpose, was located in a neighborhood far from the center, was surrounded by buildings that would form too much of a contrast with the new market, was too small for a market or finally, where buildings would have to be expropriated. In spite of all this, the City Council decided to designate the squares of *Portugalete*, *Red* and *Campillo de San Andrés*.

The proposal of the *Plaza de la Red* was finally rejected because it was too small and left very narrow passage ways, and was replaced by the nearby *Malcocinado* together with the *Val*, despite the cost of expropriations. *Portugalete* square was considered to be a suitable site because it was located in the

center of the city. *Campillo de San Andrés* square, which was located closer to the southern part of the city and at a distance from the other two, was considered a very convenient site to place a market, *for its size and its immediate proximity to populous neighborhoods*.

In addition, the three locations were strategically located, comprised lands of horizontal gradient, and covered the most populated areas of the city, close to the nerve centers: the *Val*, behind the Main Square, next to the Benedictine Monastery; *Portugalete*, next to the Cathedral, and *Campillo de San Andrés*, further south, towards suburban development zone (Figure 2).

2.2. *Ávila 1893 [12]*

As shown in Figure 2-d.1, the now vanished market of Avila had a privileged location, in front of the Cathedral of the city. Since its demolition, the space has been reused, with the construction of several buildings for public use. These buildings follow the alignment of the street in the west, and resume the layout prior to the construction of the market, again closing a space that was accessible while the market existed (Figure 2-d.2). With the construction of the market, the city did not lose a square, but gained a historical space that had been lost. It was opened up to the city after the demolition of the buildings that closed it off on the west side, respecting their alignment, but allowing traffic along the perimeter.

The plot chosen was a space inside what was known as the Episcopal Palace, from the twelfth century. It was made up of buildings along its perimeter except for its southern side, where the site could be accessed through its famous door, which connected it with the square of the Cathedral, as shown in Figure 2-d.2. In this case, the existing plot did not have enough space for a market, such that, as planned, the expropriation of several houses was necessary. However, since these demolitions took place inside the enclosure, the surrounding urban space was not affected. The demolition of the houses provided an area of 2,750 m², with a very irregular perimeter, especially on its northeast flank near the face of the city walls, which Repullés tried to standardize with a modest construction of services annexed to the market.

There is no evidence that there were several proposals for the location of the Avila market; however, according to, in the decision process, they considered fundamental *a central location, close to that occupied by shops and with easy access, ..., and sheltered from the prevailing winter winds*. In this case, a flat piece of land was also sought, to avoid leveling in the construction.

2.3. *Palencia 1895 [13]*

In Figure 2-e.2, it can be seen that with the construction of the market, a new urban space was created in Palencia. To this day, remains as such, preserving the same layout. What is more, the City Council has adopted measures for the "re-conceptualization" of its urban environment. Despite the fact that the site was part of an existing block, as shown in Figure 2-e.1, instead of designing an attached building, the urban layout was restructured. A large square with an area of 4,000 m² was created. The market was erected in the center, with streets drawn to allow traffic around its perimeter.

Already existing places in the city were not sought for the location of the market but, from the beginning, the City Council proposed empty lots distributed around the town, Determinant in this choice were two primary factors, *the central location and the elevation of the ground, which would allow the rapid evacuation of bad odors*.

2.4. *Salamanca 1898 [14]*

After the construction of its central market, Salamanca preserved the same urban configuration around the market, maintaining its layout, with the alignments and roads of a century ago.

The square chosen for its location was the object of a change of alignment on its north face. A series of houses, called *Los portales del pan* which made it lose its geometric regularity and narrowed the street, were demolished. After the demolitions, the space was incorporated into the square, which was enlarged and free of strangulations, as can be seen in Figures 3-a.1, a.2. The traffic around the perimeter was organized. In this way, almost a quadrangle was achieved, with an approximate surface area of 4,800 m². There is no evidence that different proposals were made for the location of the Salamanca market; however, the place chosen was *Plaza de la Verdura*, a traditional street market area of the city. This square constituted a wide public space and, as can be seen in Figure 3 Plan F. Coello (1867), is very central, close to the Main Square through its eastern door and very well connected. On this occasion, the City Council also preferred a consolidated public square for its central market. After its construction, the square disappeared as such and was replaced by a colossal building, which in itself formed a city block surrounded by relatively wide roads.

This strategic location, in the heart of the city, had a gradient with steep slope, a circumstance that the architect took advantage of to obtain two floors for the building, on different access levels.

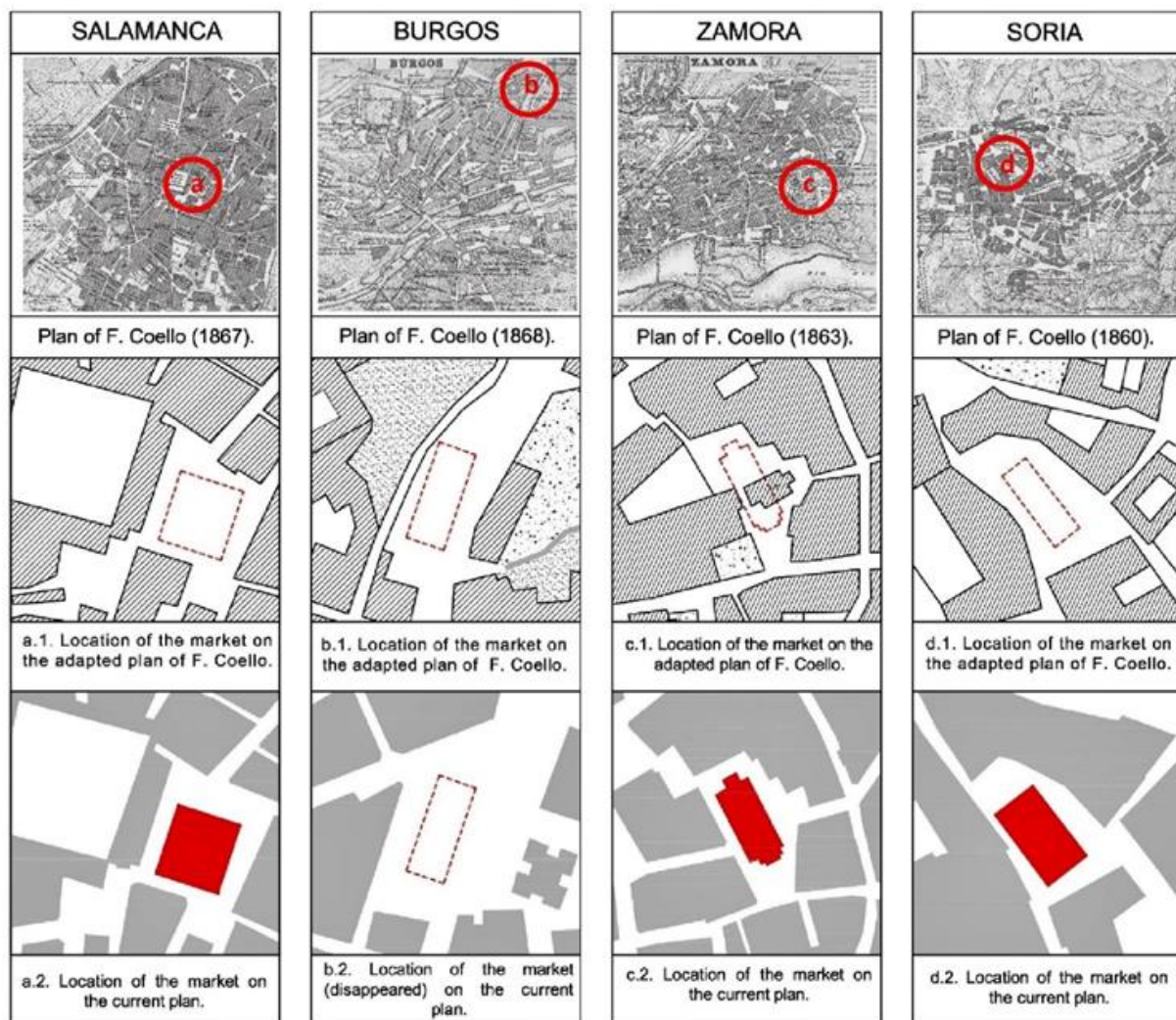


Figure 3. Comparative status of the market locations of Salamanca, Burgos, Zamora and Soria
Sources: Plans by F. Coello and the authors.

2.5. Burgos 1899 [15]

Currently, a residential building rests on the site of the vanished Burgos market, which as shown in Figure 4-a.3, practically inherited its alignment, with the difference that this new construction is much higher, distorting the space. However, the *Plaza de la Libertad*, which had also been considered as an option but rejected, today remains the same, constituting a large and populous space. With the implantation of the central market, as can be observed in Figure 3-b.1, the *Santocildes* square, which was being formed in the years prior to its construction, lost its identity. A new block comprising the market was built on it, which generated new spaces with traffic possible along its perimeter. This trapezoidal square had an elongated shape, with 4,851 m² of surface area and a completely horizontal gradient. On its south and west flanks the perimeter was totally defined by the alignment of houses, while to the north and east it was noticeably less defined, with spaced constructions. This market was the first and the only one of the three that the City Council had planned to build, distributed throughout the city. It was considered more effective system than a large central market.

In this city, public squares were also sought to locate the market, and in 1889 and 1892, two other proposals were presented that failed to materialize. Finally, *General Santocildes* square was chosen, and it fulfilled two fundamental requirements: it was large enough for a market with sixty stalls, and its location, as shown in Figure 3. Plan F. Coello (1868), was in the northern area of the city center and could thus serve an extensive area with a high population density. It seems that the City Council finally found the ideal location for its market, since, according to the project report, it had not been built before *because of the difficulty in finding spacious squares to install them*.

2.6. Zamora 1902 [16] [17]

Figures 3-c.1, c.2, make clear that, nowadays, the area surrounding the market of Zamora maintains the same shape that it had when it was built, except in its southside, where a marquee was attached to the market façade in 1936. As a result, the street undergoing has an important narrowing. For their part, the other proposed squares that were ruled out continue to be used as public spaces.

The *Plaza del Salvador*, where the Zamora market was located, was created after the demolition of the homonymous church in 1900, whose location is shown in Figure 3-c.1. It's completely irregular shape can also be observed in this figure, with the multiple breaks in its alignments. Precisely, one of these breaks went too far into the square, so several buildings had to be expropriated, to finally form a large square with an area of 4,500 m², and the perimeter shown in Figure 3-c.2. The choice was made in the first place by ruling out the unsuitable proposals, for different reasons: too far from the commercial center of the city and the populous neighborhoods, expropriations needed, difficult access to the building, excessive slope, and high construction costs.

Among all the proposed locations, the *Plaza del Salvador* was the most suitable, because, as can be seen in Figure 3. Plan F. Coello (1863), its location was very central and to the east, where the city was growing. In addition, by occupying an elevated area, it was well-sanitized and allowed the easy evacuation of wastewater, characteristics that the architect considered to be fundamental for the good functioning of markets.

2.7. Soria 1912 [18]

Today, a more recent market has been built on the plot where the Soria market used to be. As is clear in Figures 3-d.1, d.2, has a larger central line than the plan of the first one. However, it is adapted to the layout of the demolished building, which was disfigured after the multiple interventions it was subjected to over the years. For its part, the *Plaza de San Esteban*, considered for a market but ruled out, today continues to be a free space for play and relaxation that attracts many people. With the market, Soria lost one of its most extensive and emblematic squares, which covered an area of 2,500 m². Its construction gave rise to a new urban layout, meaning that traffic could circulate around the building's

perimeter, on roads that were originally wide. But became significantly narrowed after the building was extended by attaching separate bodies along the two lateral facades. This narrowing remains today (Figures 3-d.1, d.2).

The first attempt to have a central market in Soria dates from 1848, followed by several more endeavors, with constant changes of location, distributed around different enclaves of the city, such the orchard attached to the Palace of the Count of Santa Coloma.

The final location was the *Plaza de Teatinos*, in the city center, as shown in Figure 3. Plan F. Coello (1860). It had a trapezoidal shape and it was crossed by the important *Calle de los Estudios*, which linked the high districts with the *Collado*. This square was proposed to the City Council by the engineer Novella, who presented the project of a covered iron market whose location and design managed to convince the City Council.

3. Analysis of results

The analysis of all the information obtained for each of the markets is shown in Table 1. How these markets affected the current layout of these cities can be observed.

Table 1. Identification criteria analysis for iron market buildings in the urban layout of the city.

MARKETS	Year	1		2	3		4			
		Current layout		Original layout	Square	Site	Site criteria			
		1a	1b		3a	3b	4a	4b	4c	4d
Valladolid (Val)	1878									
Valladolid (Portugalete) **	1878									
Valladolid (Campillo)**	1878									
Ávila **	1893									
Palencia	1895									
Salamanca	1898									
Burgos **	1899									
Zamora	1902									
Soria**	1912									
** Original markets torn down					3. Type of location					
1. Impact of the building today					3a. Public squares or small squares					
1a. The original shape of the squares remains in the current layout.					3b. Plot between partition walls					
1b. Current use is the same as the original.					4. Preferred criteria for site selection					
2. Impact of the construction of the market on the consolidated site (modification of alignment)					4a. City center location					
					4b. Economic criteria (avoid expropriations)					
					4c. Surface area of the enclave					
					4d. Aspects related to the construction and operation of the building					

Within the context of this research, the high impact that the construction of the markets has had on the current planning is observed. It is shown that, once the definitive locations were finalized, the original configuration of the layout of the surroundings was maintained.

An important aspect in the study of markets has focused on the impact they had on the consolidated fabric of the city prior to their construction. If we quantify the results obtained, it is observed that in more than half of the examples it was necessary to modify the alignment of the surroundings to achieve a site with the proper shape and surface area to build a market on. Moreover, it is of great interest to note that the sites sought and chosen by the municipalities were primarily more or less consolidated

public squares. This circumstance has had an impact on the urban context of these cities in a very significant way. These markets remain today as buildings or unique areas within the historical city centers.

To particularize these markets that have defined the urban environment of the seven capitals under study, an analysis was made of the criteria that the political decision-makers took into account as a priority for choosing the sites on which to build them. The first to be highlighted, and coinciding in all cases, was the central location, such that in 100% of the markets studied, a centralized location that could supply the largest possible population was placed above any other criterion. As was known by those responsible, this criterion gave rise to complications deriving from the difficulty of finding large spaces in already consolidated areas, such as urban centers.

The economic factor was also taken into account, given the cost of expropriations and demolitions of privately-owned properties. Another important reason that led to the dismissal of some of the initial proposals was the fact that the site had to be large enough for the size of the building, taking into account the number of market stalls desired. In 100% of the cases other aspects that affected the construction itself and the good functioning of the market were taken into account: the slope of the site and ventilation.

Together, all these factors determined the urban design of the areas surrounding the markets and even those of other places that were proposed for their location but that were finally ruled out, since, had they been chosen, they would have undergone some type of alteration.

4. Conclusions

In the last quarter of the 19th century, in Europe, the need for unify the sale of groceries in a single building coincided with the appearance of iron, which made it possible to cover large spaces. This circumstance, which in Castilla y Leon was felt most around the turn of the century, led to the creation of a new building typology, the central market, which was to have the approval of the public and the recognition of artists. In the seven cities studied, these iron markets became distinctive buildings, authentic landmarks of the architecture of this era and symbols of prosperity, which were raised within urban centers, mainly in existing city squares. This led to the streets and squares of the immediate surroundings being transformed to respond to a new concept of commerce, so that traffic could move around the market. The significance of these buildings, already inherent in their condition, was enhanced even more by the fact that they all were set apart from any other construction, forming in themselves a single city block.

These centuries-old buildings, both those that remain unchanged, and those that were demolished or replaced by other buildings, succeeded in modifying the urban layout of representative and practically consolidated areas of historic city centers, a modification still present today, despite the difficulties, constraints and limitations that their existence causes in traffic.

We conclude which the city shapers ideas and insights were vital aspects in the urban consolidation. Nowadays it's difficult understanding their narratives, however it's worth taking into account that to have knowledge and to reflect on the reasons about those decisions it's fundamental to the current city actions. According to this criteria, the current architects and town planners have to reap the legacy of those years of prosperity and urban development to take into consideration in their projects.

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