

## **BRAGA'S CONSTRUCTIVE EVOLUTION: PATTERNS AND TYPOLOGIES**

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### **Abstract**

In recent years, historic centers have been the object of successive interventions that change the use and the characteristics of ancient buildings, contributing to the impoverishment of architectural heritage of the cities. This study has the main objective to understand the evolution and the constructive models of the city of Braga, through the analysis of the urban space, understanding how history influenced the constructive models. For this purpose, the methodology that was adopted valorized the cross-referencing of several documental sources, which have allowed the reconstitution of the urban space of the city, from the 16<sup>th</sup> century to the present day, to understand the urban and constructive changes that have occurred over this period of time. After understanding the evolution phases of the city of Braga, it became necessary to relate the city's growth with the construction of Braga's buildings, therefore the document "Mappa das Ruas de Braga" (MRB), from 1750 was analyzed. This document reflects the first image that exists of the city's constructions, with the intention of recognizing Braga's buildings. For this, it was necessary to compare the old facades designed by Padre Ricardo da Rocha and the houses that still exist in the city, to recognize the typological characteristics and the constructive changes that have occurred. As consequence, it is possible to observe that many of the old buildings are still in the city we see nowadays. It is imperative to understand the old, as something that needs to be recognized and protected because it reflects the history of the city and the experiences that occurred in it through its urban evolution.

## **1. INTRODUCTION**

The city of Braga, also known as the "City of the Archbishops", has a significant historical and architectural heritage that needs to be recognized and valued, it is urgent to study the evolution of the urban and architectural heritage, in order to understand its antecedents and its history, so that correct decisions can then be taken when a new architectural intervention is made. In practice, several miss interventions have been responsible for destroying the architectural heritage. To avoid such actions, this study intends to understand the urban morphology, through the drawing of the evolutionary phases, according to the iconographic and cartographic documental of Braga. The goal is to elaborate urban plan reconstitution proposals, to make known the several development periods of the city. Furthermore, it aims to understand how history and urban evolution conditioned the constructive models and to recognize the typological characteristics and the constructive changes of the houses of Braga, according to the representation of the houses in the "Mappa das Ruas de Braga" and the houses that still exist today in the urban landscape.

### **1.1. METHODOLOGY**

The methodology adopted for the study was based, in a first instance, on the interpretation of iconographic and cartographic documents, which enabled the reconstitution of the Historic Center of Braga, from the 16<sup>th</sup> century to the 21<sup>st</sup> century. This step aimed to allow to visualize the phases of development and the changes that occurred in the urban space. After understanding the evolution phases, it was necessary to relate the growth of the city with the construction of the buildings in Braga. In this way, we found it pertinent to proceed to successive approaches, in a decreasing study, from general to particular, which focused on the analysis of the different morphological elements, particularly: the urban structures and the streets, which subsequently contributed to the recognition of the houses that are present in the city, according to the document "Mappa das Ruas de Braga".

## 2. DOCUMENTAL SOURCES AND METHODS

### 2.1. DOCUMENTAL SOURCES

Braga has an important documental, iconographic and cartographic archive, making possible a continuous evaluation of the changes that have occurred between the 16<sup>th</sup> century and the 19<sup>th</sup> century. These sources have a particular interest because they allow a regressive analysis of Braga [1]. The study, intended as a contribution to the study of the urban space and the building models of the city of Braga, has implied the analysis and articulation of information sources from different periods that have become fundamental for the analysis and the reconstitution of the urban landscape. These sources allowed not only to understand the different phases of occupation and development of the Historic Centre of Braga, but also to make possible the urban reconstitution of the city.

### 2.2. ICONOGRAPHIC AND CARTOGRAPHIC SOURCES

The oldest known iconographic representation is the document "Nova Bracara: Mapa de Braunio" [2], drawn in 1594, where it is possible to observe the several urban structures. However, it stands out for its disproportion, something usual in the design of the time. It is also possible to analyze another 16<sup>th</sup> century representation, the "Typis Portugaliae Descriptio", an image extracted from "Bracara Carthographica" [3], published only in 1994, with a pronounced deformation and drawing mistakes, as well as the representation of some of the city streets. From the baroque period we can identify two representations: the first document, called "Mappa das Ruas de Braga" [4], drawn by Padre Ricardo da Rocha, in the year 1750, composed of numbered folders (no. 1 to no. 60), corresponding to the main streets of the city, where it exhibits the drawing of the city elevations. The second, the "Mapa da Cidade de Braga Primas" [5], from 1756-57, by André Soares, illustrates from a three-dimensional projection, the urban elements with the respective toponymic annotations. In the 19<sup>th</sup> century, with recourse to cartographic precision, the "Planta da Cidade de Braga" [6], in 1860, was made by Belchior José Garcez and Miguel Baptista Maciel, in which we were able to analyze the medieval plan of Braga. This document, although an advance in urban representation, does not include the limits of the parcels, neither the boundaries of the properties [7]. Later, in 1883-84, the engineer Francisque Goullard presents the "Planta Topográfica da Cidade de Braga" [8], composed of 30 sheets. Through the scientific progress and the surveying and drawing techniques of the time, it was possible to represent the interior of the city blocks, the buildings, and their respective parceling [7].

## 3. URBAN EVOLUTION OF THE CITY OF BRAGA

The fact that Braga has privileged documentation and did not experience significant modifications, allowed the representation of the urban space based on a digital model, through the interpretation and design of the various phases of urban development. In this way, we understand that the growth of the city of Braga, in an initial phase, was developed mainly in the interior of the city walls, with a continuous and increasing densification inside the walled city. Later, the city expanded along its exit roads and through the new spaces opened by D. Diogo de Sousa, appearing new constructions along these roads of roman origins.

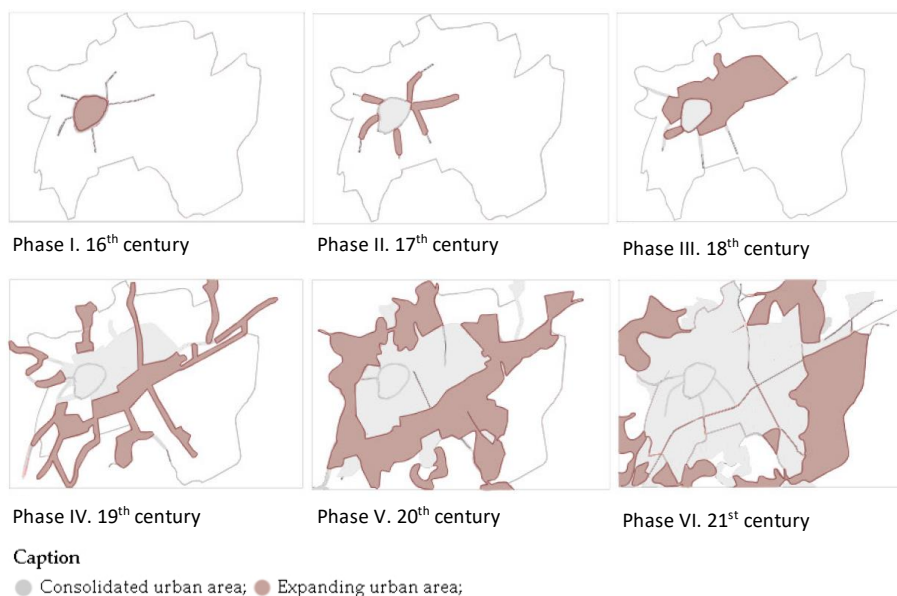


Figure 1. Representative schemes of the evolution of the urban structure of the city of Braga; Source: FONTES, A.C.; RAMOS, R.; MENDES, J. "Sistemas, Estruturas e Modelos de Gestão Urbana", CEC- PT, "Congresso Luso-Brasileiro para o Planeamento Urbano, Regional, Integrado e Sustentável" (PLURIS 2005), São Carlos, 2005 [10];

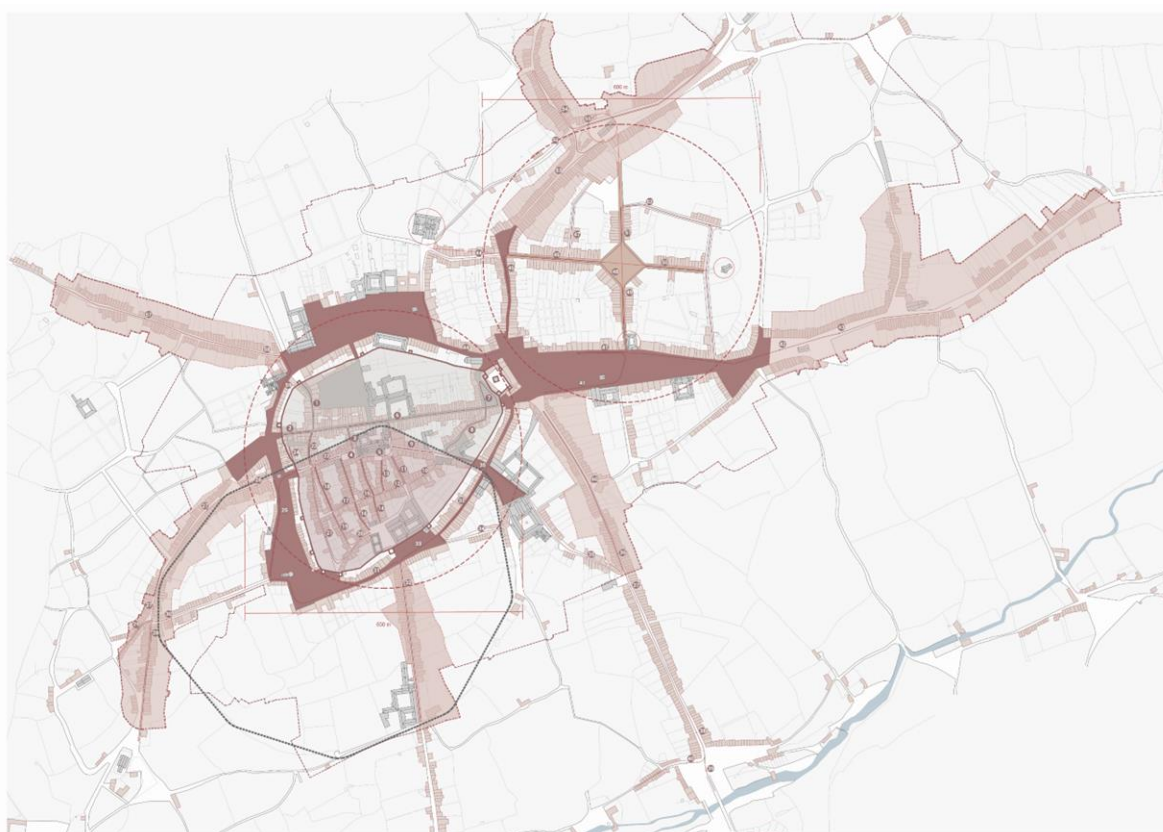
Later, the urban space began to be populated and it was necessary to create new expansion areas, such as the *Campo Novo* or *Praça Mouzinho de Albuquerque* (MRB: no. 48), which ruptured with the spontaneous urban growth [9]. Consequently, the city expanded to the south, a process that caused the urban space to extend towards the Este River. Through this expansion, empty spaces were filled and roads out of the city were built, as well as avenues that ripped the urban landscape (Figure 1).

The evolution of the city, although presenting changes in the spaces within the medieval wall limit, especially in the 19<sup>th</sup> century, the urban interventions that most influenced the city's configuration were made outside the city walls. On the one hand, inside the fortified walls, it is important to mention the development of new streets and squares, which defined a more regular grid, through the expansion of the roads and the construction of larger plots. On the other hand, the city took advantage of most of the pre-existing roads, connecting to the suburban areas, through the construction of new circulation routes, extending to the surroundings, thus assuming the radial form, which characterizes the city's evolution.

### 3.1. THE MORPHOLOGY OF THE CITY OF BRAGA

The urban plan of many cities reveals that each one presents a distinct configuration, which is the result of several phases of the territory's evolution. We can use the term "morphology" to define the elements that determine the shape or urban configuration of a city, used to describe the physical characteristics that reflect the urban development. The urban shape of the city of Braga, although it has experienced several processes of transformation, is characterized by a spontaneous expansion, which maintained the primitive urban model: the central nucleus, corresponding to the area surrounded by the medieval wall.

The urban form, metaphorically called "spider", represents the radioconcentric plan and is organized by roads that start in a radial direction towards the periphery, through where the city has expanded over the centuries, as can be seen in Figure 2. As a result, the construction of the buildings followed this growth, with the intention of fulfilling the new roads that were created [9]. The same happened in the space inside the walls, where the constructions were adapted, due to the constant population densification on the interior of the wall, causing the formation of tight plots and the height growth of the medieval house, through the increase of floors.



**Caption**  
 ■ Religious buildings: Churches and temples; ■ Civil houses and equipment; ■ Buildings of the historic center;  
 — Medieval wall; - - - Roman wall of Bracara Augusta;  
 ● Structure A; ● Structure B; ● Structure C; ● Structure D; ● Structure E

Figure 2. Representative plan of the five structures of the Braga's urban landscape [11];

### 3.2. URBAN STRUCTURES

The urban structures have been defined according to a differentiation internal to the city, in which the term "structure" reflects the use and social appropriation of urban space, resulting in different areas that constitute the "spider" vision of the morphology of the city of Braga. The shape of the "spider", characterized by Senna Freitas [12], became the starting point for the selection of the five structures. The first two structures, Structure A and B, referring to the area inside the city walls, and the others, Structure C, D and E, in the area outside the city walls, are the result of the analysis of the "Mappa das Ruas de Braga" and attempt to reflect on Braga's urban plan [13]. Not only do they define the different phases of the city's evolution, but they also try to understand the functional and social appropriation of urban space. We know that the structures reflect a subdivision of the city areas, as can be seen in Figure 3. In this case, the oldest and most recent spaces will present different building typologies, depending on the streets in which they are inserted. Also, the influence of different social groups and activities result in a greater diversity of house types, according to their social status. As the city is the result of a succession of constraints, it is pertinent to understand the urban structures according to the phases of evolution already analyzed.

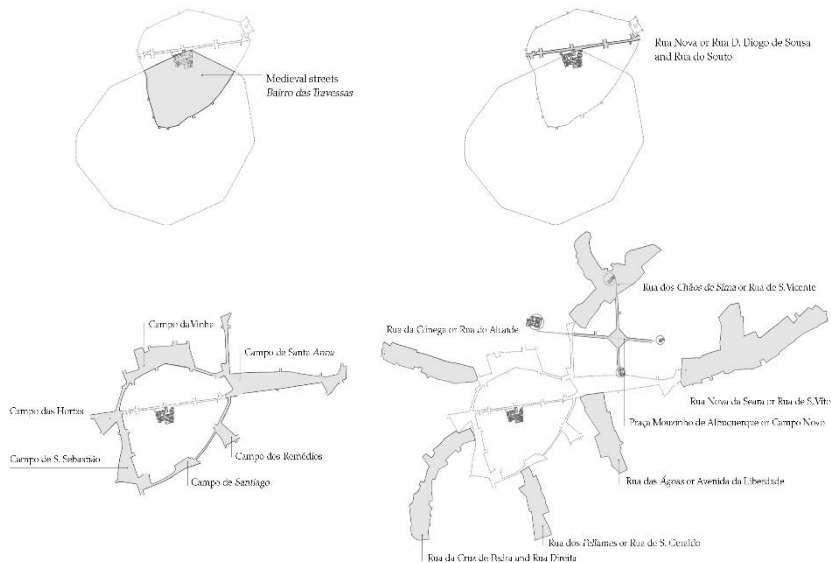


Figure 3. The urban structures of the city of Braga. (a) Structure A: Medieval streets; (b) Structure B: Main street of circulation in the city; (c) Structure C: The squares opened by D. Diogo de Sousa; (d) Structure D and E: Access roads to the city and the new urban plan [11];

The Structure A, commonly known as *Bairro das Travessas*, is located in the southwest part of the walled city. It corresponds to the oldest area of the city of Braga, since it was defined through the intersection between the perimeter walls of the Roman city and the walls of the medieval city in the periods of maximum expansion [1, 13]. The structure evidences the medieval character of the city and is constituted by narrow and tortuous streets, which accommodated all kinds of commercial activities, evidenced by the toponymic denominations of the streets [14]. Although it was subjected to significant rectifications, the overlap of several historical periods is observed through the design of the facades, which have an irregular configuration. The Structure B corresponds to *Rua Nova* (MRB: no. 2) and *Rua do Souto* (MRB: no. 6). The main rectilinear street was an innovative characteristic of the Renaissance, that constituted a structural line that crossed the walled city fence in the East-West direction and that allowed the direct connection by the extramural regional routes. Because of the continuous development, narrow and long plots began to be annexed, which suggest the intensive occupation of the urban space, evidencing the commercial activity on the ground floor of the houses [13, 15]. The Structure C corresponds to the Renaissance fields, opened by D. Diogo de Sousa, in the 16<sup>th</sup> century, which establish a continuous circuit with ample circulation spaces, and which potentiated the urbanization process in the suburban streets, which connected the city with the outside. The fields were the impulse for the construction of large religious institutions and manor houses, using large plots and imposing facades of great dimensions. The space was adequate to the requirements of the owners, as they wanted the building to be noticed to demonstrate their power. This structure has not suffered significant transformations, however, the construction of new access roads connecting these spaces is evident. Through Structure D, organized in radial way, the city of Braga's spontaneous growth was organized. We understand this structure through the long access road spaces, with rural characteristics, predominantly occupied by farms and cultivated fields. The streets, through which people circulated were essential to the commercial activities that took place in the remaining structures [13]. These spaces were being filled, according to the development of the city, which usually happened from the center to the periphery. Finally, Structure E corresponds to a complex constituted by a central square of quadrangular format, called *Praça do Gavião* (current *Campo Novo* or *Praça Mouzinho de Albuquerque*, MRB: no. 48). The innovative character of this structure is understood through the proportion it assumes in the urban space, since the occupied area corresponds approximately to the area of the medieval city [16]. We understand this structure as a rupture of the city's spontaneous growth system, being an exception in relation to the other structures since it is a planned space.

#### 4. RECOGNITION OF THE HOUSES OF BRAGA

The constructions we can see nowadays are the consequence of several transformations that happened over the years. However, the urban house genesis in Braga is still very well represented in the urban landscape, although hidden by the new buildings. Through this study we attempt to remove the stratified layers, to identify and analyze these houses, both in the past and currently using the document "Mappa das Ruas de Braga", which was the first representation registered of Braga's houses. On it were drawn the elevations of the houses of Braga, resulting in a very approximate image of the city. Because of this register, we have today access to a document whose analysis allows us to determine various types of architectural solutions, including noble, bourgeois and popular houses, and also to contemplate the design of the various convents, churches and chapels, through the representation of the facades. It is possible to identify in the buildings, their period of construction, the presence of setbacks, the leveling of the roofs, the different types of doors and windows and the constructive materiality [13, 15].

As observed in Figure 4, relative to the "Mappa das Ruas de Braga" representations, we can identify that it presents different represented typologies. In this way, we understand that houses have an inherent morphofunctional character. Therefore, a structure, according to their historical conditions, has functionalities that are reflected in the design of the houses that constitute the city.



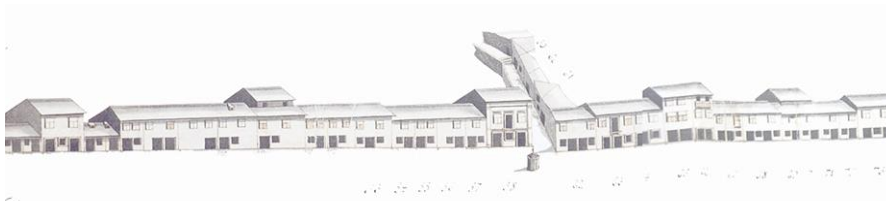
Structure A: *Rua de Santo António* (Document sheet no. 19) and *Rua das Chagas* (Document sheet no. 18);



Structure B: *Rua Nova*, current *Rua D. Diogo de Sousa* (Document sheet no. 2);



Structure C: *Terreiro de Nossa Senhora-a-Branca*, current *Largo de Nossa Senhora-a-Branca* (Document sheet no. 42);



Structure D: *Praça do Gavião*, current *Campo Novo* or *Praça Mouzinho de Albuquerque* (Document sheet no. 48);



Structure E: *Rua dos Chãos de Síma*, current *Rua de S. Vicente* (Document sheet no. 53);









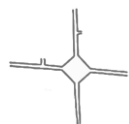

Figure 4. Representation of the streets from the "Mappa das Ruas de Braga", 1750. Watercoloured drawing made by Padre Ricardo da Rocha. Image taken from the book purchased by the author: AAVV. "Mappa das Ruas de Braga" – Vol. I, Braga, Braga Distrital Archive of the University of Minho and Portuguese IBM Company, 1989-91 [15];



## 5. THE CHARACTERISTIC HOUSES OF BRAGA'S URBAN STRUCTURES

The five structures are constituted by different types of houses, with a predominance of a particular typology in comparison to others, according to the occupation in the urban space (Table 1). As already mentioned, the Structure A, corresponds to the oldest part of the city and consists of medieval narrow streets. In this way, it is possible to observe a great variety of typologies, because of their permanence over the history of the city. The irregular streets with commercial names have houses of two and three floors, the facades are simple with a projection on the second and third floors, usually made of wood. It is still possible to observe some noble houses of distinguished personalities, with floors and a wide stone front, located usually near crossroads, allowing access between the two streets [17].

Table 1. Recognition of the facades of the Historic Center of Braga and the facades of the “Mappa das Ruas de Braga” [11, 15];

Structures	Symbols	Type of houses
Structure A		
Structure B		
Structure C		
Structure D		
Structure E		

The Structure B corresponds to the part of the city with the highest number of floors. In it is evident the intensive occupation of commercial activity on the facades of the houses, with a predominance of long narrow plots. The street has a great regularity of facades, this characteristic is more visible in *Rua Nova* (MRB: no. 2) and *Rua do Souto* (MRB: no. 6). Looking at the document the houses with a small front of three and four floors covered by wooden windows and balconies are prominent [13, 18]. The houses of two floors with a large front and with elaborated stone elements of more illustrious families, appear in smaller numbers, being located at the ends of the streets, as in Structure A.

The Structure C, is characterized by houses of two floors that occupy the ample circulation spaces, often being necessary the connection of several plots for their construction. Although the document only illustrates four fields, we can observe that large religious in situations and stately homes stand out. The houses of elite families have wide fronts in parallel plots, or smaller ones in perpendicular plots, but with great decoration in the openings and in the balconies, showing the power of the family through the worked stone elements [17, 18].

The Structure D corresponds to simple houses with narrow fronts and low elevations. The subdivision of this structure is disorganized, as ground floor houses and houses with only one floor are mixed together. The houses are small and without ornament, typical of suburban rural roads. However, in the transition between Structure C and Structure D, larger houses can be observed. The number of floors decreases as we move away from the city center, decreasing not only the compactness of the buildings, but also the construction quality of the houses. In the same way, the empty lots increase in the same direction [19].

The Structure E corresponds to an urban project with characteristics of the Baroque period. Observing the "Mappa das Ruas de Braga", it is evident the houses' symmetry, which have two floors and stone facades with 6 meters. The openings are controlled and the balconies are supported on corbels, centered with the doors and windows on the first floor. It is a model that is replicated throughout the urban complex, with the intention of maintaining the uniform morphology of the *Praça do Gavião* (MRB: no. 48). The houses of the adjacent streets present characteristics of privileged personalities, keeping the two floors and the stone elements in the facades [16, 20].

## 7. CONCLUSIONS

This study was developed with the purpose of understanding the historical and architectural heritage of the city of Braga, through the study of ancient buildings. In this way, its development proved to be pertinent since the main objective was to value the constructive elements of the past. Through the building's location in the city, it is possible to understand that these, distributed in a radioconcentric way, contributes to a hierarchical organization of the urban space. Houses, according to their appropriation and positioning in the urban landscape, have different characteristics that are represented in the "Mappa das Ruas de Braga". For example, commercial houses tend to be in the urban center, the richer houses in the fields opened by D. Diogo de Sousa, and the poorer houses distributed along the radial roads, on the periphery of the city. The analysis of the facades and the search for old alignments in the current buildings, allowed to understand the building's transformation process and to identify the architectural characteristics. In this sense, it is important to emphasize that the buildings of today are the result of several transformations that have occurred over time. Also, the genesis of the Braga's house is still present in the urban landscape, although hidden by the new buildings. The aim of the research was to contribute to the recognition of the construction models in different parts of the city, which in turn reflect the phases of urban evolution. This study has proved to be particularly relevant because it has reconstructed, through documentary sources, the evolutionary phases of the city of Braga, with the purpose of recreating the urban plan in different historical periods, demonstrating, in the same way, the constructive evolution of the city. In conclusion, it was possible through this research to show and reflect on the architectural characteristics of the houses of Braga, with the purpose of contributing to a better knowledge about the urban history and its constructions.

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