Medieval Territories

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Edited by

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THE URBAN MORPHOLOGY OF BRAGA IN THE FOURTEENTH AND FIFTEENTH CENTURIES: AN ANALYSIS METHODOLOGY[1]

MARIA DO CARMO RIBEIRO, MANUELA MARTINS, FERNANDA MAGALHÃES AND NATÁLIA BOTICA

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Introduction

The long-term study of Braga's urban evolution has contributed to the definition and the characterization of the main urban consolidation phases witnessed by the city since its origin in the Roman period until the present day. The study results have benefited from particular conditions, mainly regarding the variety of available sources that allow the documentation of the successive urban and architectonic transformations and the fact that these key phases marked the overall city development, through the partial or full occupation/reuse of the former urbanized areas. In reality, since its foundation in the late first century B.C., the city's urban space has been permanently occupied.

In Roman times, the *urbs* grew over a flattened hill and followed an urban project with a rectangular plan that occupied an area of around 30 hectares, with the Alto da Cividade district forming its central place, as represented by the *forum*. The *Bracara Augusta* settlement and occupation process was continuous and the city reached its maximum urban expansion

in the second century, when it also exhibited densely occupied outskirts.[2] When a robust wall was constructed during the late third/early fourth centuries, it effectively surrounded an urban area of around 48 hectares.[3]

However, with the fall of the Western Roman Empire, a series of more complex and turbulent occupational periods originated some gradual changes inside the walled area, contributing towards the urban consolidation of the northeast quadrant's occupation during the High Middle Ages, which was the origin of the medieval town. Under Suebic-Visigothic control (fifth-eight centuries), the city kept itself within the defined boundaries of the Low Empire wall.[4] Nevertheless, the urban mutations occurring between the eighth/ninth and thirteenth centuries transformed the city into a small fortified borough that reused the northern part of the Low Empire wall, bounded by a new defensive perimeter on its southern and western parts, and which occupied an area of the previous Roman city no wider than 15 hectares.[5]

In fact, *Bracara Augusta*'s northeast quadrant was to be the genesis of the High Medieval city and the site from which the urban area would develop towards the north and northeast parts, surrounded by a new

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[2] Manuela Martins, "*Bracara Augusta*. Panorama e estado da questão sobre o seu urbanismo", *Do Castro à Cidade. A romanización na Gallaecia e na Hispânia indoeuropea* (Lugo: Diputación de Lugo, 2009), pp. 181-211; Manuela Martins, Jorge Ribeiro, Fernanda Magalhães and Cristina Braga, "Urbanismo e arquitetura de *Bracara Augusta*. Sociedade, economia e lazer", *Evolução da Paisagem Urbana: Economia e Sociedade*, ed. by Maria do Carmo Ribeiro and Arnaldo Melo (Braga: Centro de Investigação Transdisciplinar "Cultura, Espaço e Memória", 2012), pp. 29-67.

[3] Francisco S. Lemos, José M. F. Leite and Luís Fontes, "A muralha de Bracara Augusta e a cerca medieval de Braga", *Mil Anos de Fortificações na Península Ibérica (500-1500), Actas do Simpósio Internacional Sobre Castelos,* ed. by Isabel Fernandes (Palmera: Edições Calibri, 2001), pp. 121-132.

[4] Luís Fontes, Manuela Martins, Maria do Carmo Ribeiro and Helena Paula Carvalho, "A cidade de Braga e o seu território nos séculos V-VII", *Espacios Urbanos en el Occidente Mediterráneo (s. VI-VII)* (Toledo: Toletum Visigodo, 2010), pp. 255-262.

[5] Maria do Carmo Ribeiro and Luís Fontes, "The urban morphology of Braga between Late Antiquity and the fourteenth-fifteenth centuries", *Braga and its territory between the fifth and the fifteenth centuries*, ed. by Raquel Martínez Peñín (Lleida: Edicions i Publicacions de la Universitat de Lleida, 2015), pp. 29-45.

archaeologically documented defensive perimeter.[6] Throughout the fourteenth and fifteenth centuries a new and wider fortified city emerged, with the construction of another defensive wall, one that began to incorporate its suburbs (map 1).[7]
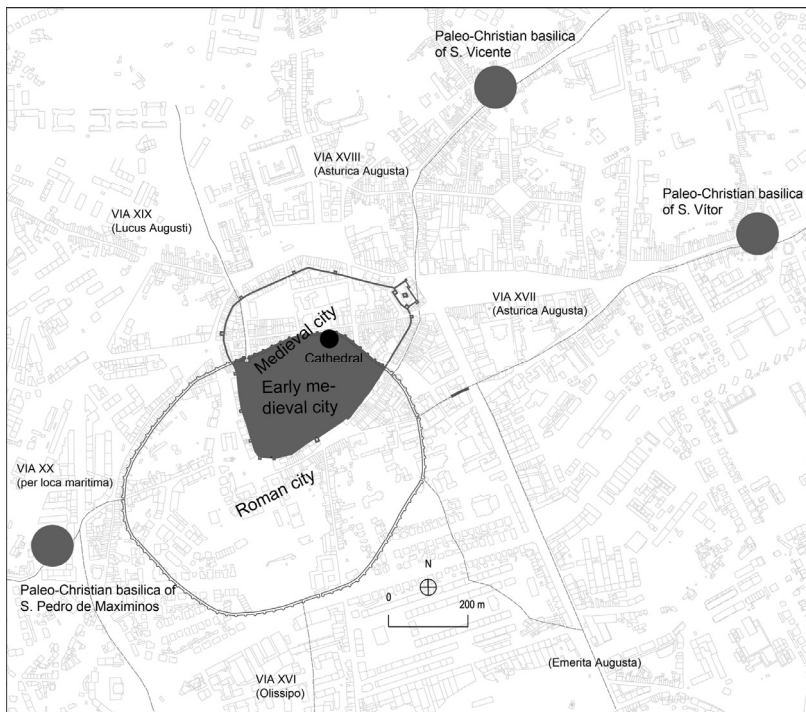
Map 1. General planimetry of the territory between Roman time and the Middle Ages (by the Authors)

Since then, and until the present day, this new urban area has been permanently occupied and has been demonstrating urban continuities and

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[6] Luís Fontes, Francisco Sande Lemos and Mário Cruz, "'Mais Velho que a Sé de Braga'. Intervenção arqueológica na catedral bracarense: notícia preliminar", *Cadernos de Arqueologia*, 2/14-15, (1997-98), pp. 137-164.
[7] Maria do Carmo Ribeiro and Arnaldo Sousa Melo, "O papel dos sistemas defensivos na formação dos tecidos urbanos (Séculos XIII-XVII)", *Evolução da paisagem urbana: transformação morfológica dos tecidos históricos*, ed. by Maria do Carmo Ribeiro and Arnaldo Sousa Melo (Braga: Centro de Investigação Transdisciplinar "Cultura, Espaço e Memória", 2013), pp. 190-192.

discontinuities materializing from transformation processes that occurred rather significantly in the sixteenth and the nineteenth centuries.[8] Naturally, and despite part of the urban area being permanently occupied since the city's Roman foundation, the registered urban changes have been rather prominent, albeit not always easy to identify.

As noted above, the study of Braga's urban medieval evolution benefits from a variety of sources that complement each other; some of those we should highlight are the archaeological sources, cartography and historical iconography, written sources, and the historical buildings. Under these circumstances, the challenges within our work have been the adoption of an analysis methodology that contributes towards the understanding of the city's urban evolution analysis, an objective that catered for the handling of different types of data, and the adoption of a methodology that included its articulation.

Effectively, the study of the urban morphology of the city between the fourteenth and fifteenth centuries, which is the overall aim of the present paper, must consider, on the one hand, the morphological attributes that featured the urban space during the previous urban periods and, on the other hand, the potential of the different types of available sources through an analysis methodology that enables the simultaneous use of progressive and regressive approaches.

In this sense, we structured the present work into three parts. In the first part, we will approach the potentialities offered by the diverse types of sources, followed by an assessment of the analysis methodology adopted, and lastly the results of its application to the morphological studies in Braga, between the fourteenth and fifteenth centuries.

2. Sources and Analysis Methodology

2.1. Sources

Among the available sources, and especially the ones used by our analysis, we highlight the archaeological data, cartography and historical

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[8] Miguel Sopas Bandeira, "O Espaço Urbano de Braga-obras públicas, urbanismo e planeamento (1790-1974)", (Braga: University of Minho, PhD Dissertation, 2002); Maria do Carmo Ribeiro, "Braga entre a época romana e a Idade Moderna. Uma metodologia de análise para a leitura da evolução do espaço urbano", (Braga: University of Minho, PhD Dissertation, 2008).

iconography, written sources, and the historical constructions and fossilized marks existing within the current urban fabric.

2.1.1. Archaeological Sources

Archaeological data emerging from the excavations conducted in Braga's urban space since 1976 and as part of the 'Bracara Augusta Rescue Project' provide an extremely relevant archive that has enabled a characterization of the Roman urban layout and the successive transformations impacting the city in the following periods up to the High Middle Ages.[9]

Actually, from a morphological point of view, the archaeological data documented that the urbanized area of the Roman foundational period was planned according to an orthogonal layout defined by a system of regular streets that crossed perpendicularly and were structured according to two main road axes, the *cardus maximus*, running N/S, and the *decumanus maximus,* running E/W, which formed regular residential city quarters. As previously noted, *Bracara Augusta*'s foundational urban plan referred to a rectangular open urban surface of around 30 hectares, with the *forum* occupying the central place and located in the highest part of the city.[10]

However, the edification of a powerful wall in the late third/early fifth centuries significantly changed the urban shape of the foundational city, closing and bounding a space that was open up to then, providing the city with an elliptical shape.[11] Equally, due to the construction of this defensive

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[9] Manuela Martins, Luís Fontes, Armandino Cunha, "Arqueologia urbana em Braga: balanço de 37 anos de intervenções arqueológicas", *Arqueologia in Portugal 150 anos*, ed. by José Morais Arnaud, Andrea Martins and César Neves (Lisboa: Associação portuguesa de Arqueólogos, 2013), pp. 81-88; Manuela Martins and Luís Fontes, "*Bracara Augusta*. Balanço de 30 anos de investigação arqueológica na capital da Galécia romana", *Mémoire*, 19 (2010), pp. 111-124.

[10] Manuela Martins and Maria do Carmo Ribeiro, "Em torno da Rua Verde. A evolução urbana de Braga na longa duração", *Evolução da paisagem urbana. Transformação morfológica dos tecidos históricos*, ed. by Maria do Carmo Ribeiro anda Arnaldo Melo (Braga: Centro de Investigação Transdisciplinar "Cultura, Espaço e Memória", 2013), pp. 11-44.

[11] Francisco Sande Lemos, José M. F. Leite and Armandino Cunha, "A muralha romana (Baixo Império) de Bracara Augusta", *Murallas de ciudades romanas en el Occidente del Imperio. Lucus Augusti como paradigma, Actas del Congreso Internacional*, ed. by Antonio Rodríguez Colmenero and Isabel Rodá de Llanza (Lugo: Diputación Provincial de Lugo, 2007), pp. 329-341.

structure, some changes emerged within the regular urban plan as a result of the closing of some streets and buildings overlapping some public spaces, such as porticos and streets, which suggest the beginning of a process of reorganizing the residential quarters (map 2).[12] The fragmentation of the previous Roman quarters was a complex process throughout subsequent centuries, not yet completely understood, which culminated in its division into much smaller plots, giving rise to the medieval urban plan that will be analysed below.
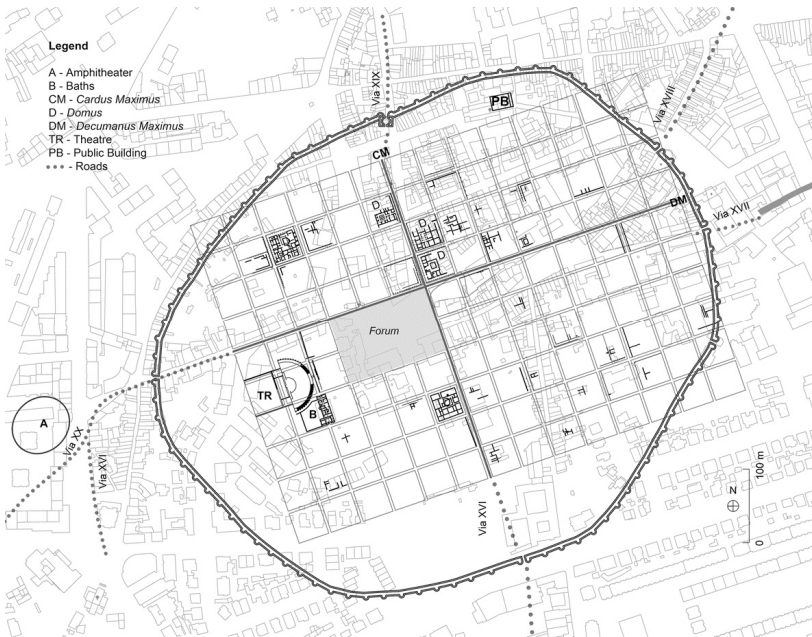
]
Map 2. Urban plan of *Bracara Augusta* in the Low Empire (by the Authors)

Equally, the archaeological data documented a series of changes associated with the abandonment of some entertainment buildings, such as the theatre and the amphitheatre, and with the dissemination of Christianity, mainly related to the construction of the first early Christian basilica in the city. This was built, in the late fourth and early fifth centuries, in the northeast quadrant of the Roman town, and reused a

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[12] Manuela Martins and Maria do Carmo Ribeiro, "Em torno da Rua Verde", p. 25.

previously existing Roman building located on the same site where the medieval cathedral would also later be erected.[13]

Recent archaeological data also documented an intense occupation of the ancient Roman town area between the fifth and seventh centuries, during the Suevic and Visigothic periods. Two types of space occupation seem to have occurred within the inner city walls during this period. One is clearly associated with the continuity of the residential Roman blocks occupation, where the *domus* kept being structured around the orthogonal foundational urban layout.[14] A second type of occupation is linked with the emergence of new domestic and artisanal constructions organized around areas previously associated with Roman public buildings, as is the case with the Roman theatre.[15]

Consequently, during Late Antiquity a new urban reality emerged in the northeast quadrant of the Roman town in the area where the first early Christian basilica was constructed, becoming the new administrative and religious urban centre. This was bounded by the episcopal power that existed in the city and was fully consolidated with the construction of the cathedral and its respective episcopal complex in the eleventh century.[16]

Archaeological data also confirmed that the northern part of the Roman wall, dating to the Low Empire, was kept in use up to the early fourteenth century, although it should be said that the construction of a new wall in the southern part likely occurred between the late ninth and tenth

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[13] Luís Fontes, Francisco Sande Lemos and Mário Cruz, "'Mais Velho' que a Sé de Braga'. Intervenção arqueológica na catedral bracarense", pp. 137-164.

[14] Manuela Martins, Fernanda Magalhães, Raquel Martínez Peñín and Jorge Ribeiro, "The housing evolution of Braga between Late Antiquity and the Early Middle Ages", *Arqueología Medieval. Hàbitats Medievals*, ed. by Flocel Sabaté and Jesús Brufal (Lleida: Pagès editors, 2016), pp. 35-52.

[15] Manuela Martins, Jorge Ribeiro, Fernanda Magalhães and Raquel Martínez Peñín, "Urban changes in Braga in Late Antiquity: The area of the Roman Theater", *Braga and its territory between the fifth and the fifteenth centuries*, ed. by Raquel Martínez Peñín (Lleida: Edicions i Publicacions de la Universitat de Lleida, 2015), pp. 11-28.

[16] Luís Fontes, "O Norte de Portugal entre os séculos VIII e X: balanço e perspetivas de investigação", *Asturias entre visigodos y mozárabes. Visigodos y omeyas VI* (Madrid: Consejo Superior de Investigaciones Científicas, 2012), pp. 443-474.

centuries.[17] With this early medieval wall in place, two thirds of the Roman city area remained outside the protected urban area (map 3).
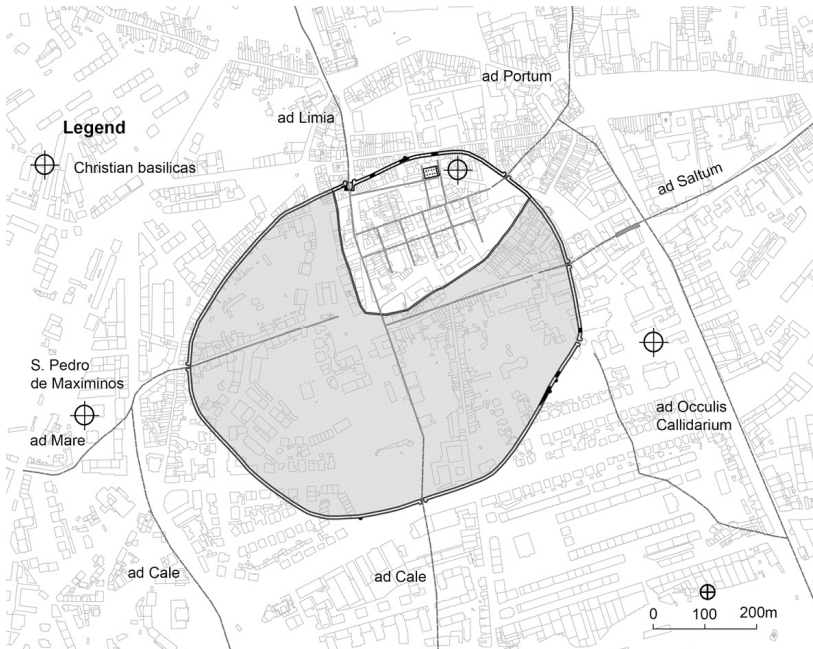
Map 3. Urban plan of Braga in 9th-13th centuries (by the Authors)

The reuse of the northern part of the Roman wall included a door from the former defensive system, as suggested by archaeological excavations conducted on site.[18] This door provided articulation between one of the main inner-walled Roman axes, the *cardus maximus*, running N/S, and the Via XIX that crossed the valleys of the rivers Cávado and Homem, connecting *Bracar*a with *Lucus Augusti*.[19] The aforementioned archaeological excavations equally enabled the identification of a medieval pavement, corresponding to the modern *Sapateiros* street, which

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[17] Luís Fontes, "Braga e o norte de Portugal em torno a 711", *Zona Arqueológica*, 15 (2011), p. 317.

[18] Excavation carried out by the Archaeological Office of the city of Braga, directed by Dr. Armandino Cunha, whom we thank for the information.

[19] Luís Fontes, "O Norte de Portugal entre os séculos VIII e X", pp. 443-474.

ran alongside the old *cardus maximus* axis preserved in the medieval *Rua Verde*.[20]

The archaeological data produced in the last 40 years has been the only basis for tracing Braga's urban evolution from its Roman origin up to the High Middle Ages, at a time when the *urbs* was a mere small fortified borough no bigger than 15 hectares, but this would be the core from which the city would evolve throughout the Middle Ages.

2.1.2. Documental Sources

The oldest available historical sources used for the morphological study of Braga were essentially produced for administrative purposes by the Cathedral Chapter of Braga. In this regard, we should stress that, since the 12th century, the city's masters have been the archbishops, elected after the city became an ecclesiastical centre in the year 1112.[21] To deal with this particular issue a group of documents have been used, in particular the *1° Livro do Tombo do Cabido*, referring to the period between 1369 and 1380,[22] the *Índice dos Prazos das Casas do Cabido*, covering the time between 1406 and 1905[23] and the *Memorial das Obras que D. Diogo de Sousa mandou fazer*, for the years 1505 to 1532.[24]

In general terms, these documents list the properties that the Cathedral Chapter of Braga had in the city. Although, they provide indirect information regarding urban features, they mainly provide data related to the different urban spaces, namely the streets and squares, while identifying their names and the urban properties owned by the Chapter.

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[20] Manuela Martins and Maria do Carmo Ribeiro, "Em torno da Rua Verde", p. 25.

[21] Avelino Jesus da Costa, *O Bispo D. Pedro e a Organização da Arquidiocese de Braga* (Braga: Irmandade de S. Bento da Porta Aberta, 1997), pp. 213-223.

[22] This document belongs to the Arquivo Distrital of Braga and was critically dated between 1369-1380 by: Avelino Jesus da Costa, *O Bispo D. Pedro*, pp. 213-223.

[23] Published together with the 2nd volume of 'Mapa das Ruas de Braga' (edited by Arquivo Distrital de Braga/Universidade do Minho e Companhia IBM Portuguesa, Braga, in 1989-91).

[24] This document was produced by canon Tristão Luís, between 1532 and 1565 and belongs to: ADB, General record, book 330, pp. 329-334v. It was published by: Avelino Jesus da Costa, "D. Diogo de Sousa - Novo fundador de Braga e grande Mecenas da Cultur", *Separata do Livro de Homenagem à Arquidiocese Primaz nos 900 Anos de Dedicação da Catedral* (Braga: Catedral de Braga, 1993), pp. 15-118.

The analysis of the *1º Livro do Tombo do Cabido* allowed us to identify a list of the names of the different streets that existed inside the walled space in the second half of the fourteenth century and their approximate location within the urban layout through the names of the places where the streets would begin and end and through their general association with prominent buildings in the medieval town, such as the cathedral, the wall's gates or other sites that focused on commercial and trading activities. It was also possible to identify the houses that the Chapter held in each street, alongside the existence of backyards, courtyards and annexed buildings, and the housing typologies and their state of preservation state can also be identified. Furthermore, through the analysis of the names given to each street it was possible to get information related to its functionality (*Sapateiros* street-Shoemakers street), the street morphology or even the type of residents (*Burgueses* street-Burghers street).[25]

The *1º Livro do Tombo do Cabido* provided data related to the streets inside the walled space and characterized the system and the properties located on the city's outskirts in the second half of the fourteenth century. The *Índice dos Prazos das Casas do Cabido* is a document created in the eighteenth century, comprising four volumes. It was produced with the aim of reviewing and reordering the Chapter archive that was, at the time, in a state of great disarray.[26] The book lists the urban properties owned by the Chapter, their typology and approximate location, providing information related to their successive tenants and transferences, with the oldest being from the year 1406. This document is particularly relevant for the urban study of the city due to the presence of the urban properties belonging to the Chapter and recording a plan of the houses of the eighteenth century streets that have also been graphically represented in a book entitled *Mapa das Ruas de Braga*, to be analysed later.

The *Memorial das Obras que D. Diogo de Sousa mandou fazer* is a document identifying several urban interventions commissioned by D. Diogo de Sousa during his governance of Braga, between the years 1505 and 1532. In reality, this document describes a real urban program focused

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[25] Maria do Carmo Ribeiro, "Braga entre a época romana e a Idade Moderna", pp. 65-70, 195-198.

[26] José Augusto Ferreira, *Fastos Episcopais da Igreja Primacial de Braga (séc. III-XX)* (Braga: Mitra Bracarense, Famalicão, 1932), pp. 271-275; Maria da Assunção Vasconcelos, "O Mapa das Ruas de Braga de 1750 – Breve apontamento sobre a situação do Cabido Bracrense no séc. XVIII", *Fórum*, 4 (1998), pp. 91-101.

on modernizing and embellishing the city under the orders of the archbishop and widening the medieval city outside the walls.[27] The latter was a key target that D. Diogo de Sousa had for his program, as the city had not yet developed towards its outskirts. Among other aspects, we should highlight the opening of new larger gates on the medieval wall, close to the old ones. In terms of the inner-walled area, other than reforms impacting the physiognomy and architecture of key city buildings, there were changes conducted to the street system, including the creation of new streets and squares, and the regulation of others.

The aforementioned urban transformations were easily identified in the first general illustration produced for the city in the year 1594, widely known as Braunio's Map, which will be analysed later. Consequently, while the *Memorial das Obras* registers the changes affecting the urban layout of Braga at the beginning of the modern age, it can be cross-referenced with Braunio's Map and the *1º Livro do Tombo do Cabido* in order to get an approximate idea of the medieval urban features.

Although it is generally difficult to use historical documentary data in urban morphology studies, we must emphasise its relevance, in the case of Braga, after it has been cross-referenced with other sources, as it gives us a more accurate perspective of the features of the medieval and modern town.

2.1.3. Iconographic Sources

The study of modern urbanism in Braga has benefited from another type of source related to the city's first general illustrations. As previously noted, the first known iconographic representation dates back to the year 1594 and refers to the widely known Braunio's Map (map 4). Although it is not a map in a topographic sense, this illustration provides a general image of the urban layout of the city in the sixteenth century, which we consider to be equally valid for the medieval town's morphology.

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[27] Avelino Jesus da Costa, "D. Diogo de Sousa", pp. 15-118; Miguel Sopas Bandeira, "D. Diogo de Sousa, o urbanista-leituras e texturas de uma cidade refundada", *Bracara Augusta*, 103 (2000), pp. 19-58; Rui Maurício, *O mecenato de D. Diogo de Sousa, Arcebispo de Braga (1505 1532)* (Lisboa: Magno Edições, 2000).

Map 4. Braunio's Map (1594) (by the Authors)

In reality, the street system represented in Braunio's Map for the inner-walled area matched, in general terms, both the same area referred to in the *1º Livro do Tombo do Cabido* from the second half of the fourteenth century, and the area represented in the first topographically accurate map dating to the years 1883/1884. Equally, the changes endured by the modern town, also listed in the *Memorial das Obras que D. Diogo de Sousa mandou fazer,* can be easily identified in Braunio's Map. In general, these changes have been morphologically highlighted and, in some cases, topographically decentred, as the vast majority were carried out inside the walled areas of the city, in the lesser urbanized ones, or in the immediate city suburbs.

The morphology of sixteenth century Braga is also represented in another general town illustration, produced in the seventeenth century and corresponding to a coloured map included in an album in which other Portuguese settlements have also been represented (map 5).[28] Despite some morphological anomalies present in the illustration, its comparison

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[28] Henrique Barreto Nunes, "Uma Imagem Inédita de Braga no Século XVII", *Forum*, 15/16 (1994), pp. 21-23.

with Braunio's Map enables us to document the process of the city's growth, mainly in terms of the rise of constructed plots.

The features of the eighteenth century urban layout were illustrated in two types of cartographic representations: the *Mapa das Ruas de Braga*,[29] commonly designated by the abbreviation 'MRB', and the *Mapa da Cidade de Braga Primas*, created by the architect of Braga André Soares (map 6).[30]

Map 5. Illustration of Braga in 17th century (by the Authors)

The *Mapa das Ruas de Braga* was produced by the Cathedral Chapter of Braga as part of its archive reorganization process, together with the *Índice dos Prazos das Casas do Cabido*.[31] In reality it refers to a book depicting a high number of streets in the eighteenth century town, through the drawing of the construction elevations along the streets and squares where the Chapter held properties. The graphical representation of the different building facades was made to scale, therefore providing relevant data related to the height and width of the houses and other buildings. Although it failed to integrate the entirety of the spaces of the eighteenth

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[29] Maria da Assunção Vasconcelos, "O Mapa das Ruas de Braga de 1750", pp. 91-101.
[30] André Rybeiro Soares da Silva, *Mapa da Cidade de Braga Primas* (Lisboa: Biblioteca da Ajuda, 1755(?)).
[31] José Augusto Ferreira, *Fastos Episcopais da Igreja Primacial de Braga*, pp. 91-101.

century city, this source portrayed the totality of the buildings, on both sides of the streets and squares, and includes the totality of the inner-walled area.[32] Constructions belonging to the Chapter were marked with a numbered footnote linking them with the *Índices dos Prazos das Casas do Cabido*. This allowed the verification of a few represented constructions of medieval features, namely residential units, while illustrating parts of the medieval defensive system, such as doors, windows and towers (map 7).
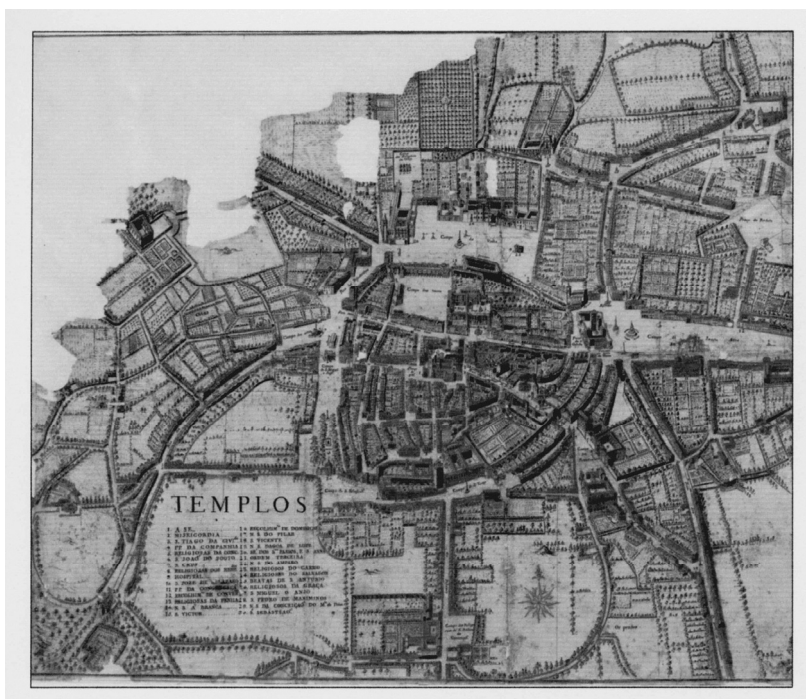
Map 6. *Mappa da Cidade de Braga Primas* (18th century) (by the Authors)

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[32] Maria da Assunção Vasconcelos, "O Mapa das Ruas de Braga de 1750", pp. 91-101; Miguel Sopas Bandeira, *O espaço urbano de Braga em meados do século XVIII* (Porto: Edições Afrontamento, 2000).
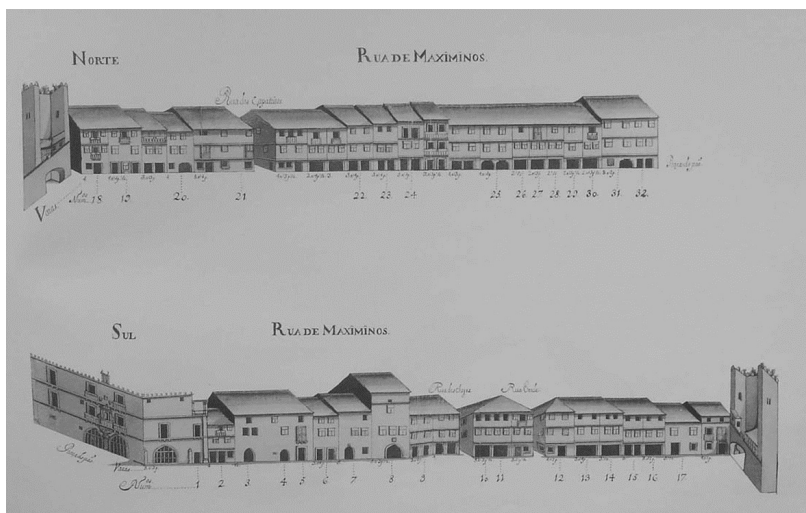
Map 7. *Maximinos* street in *Mappa das Ruas de Braga* (18th century) (by the Authors)

This document has a high iconographic and cadastral value and performed an important analytical tool for further comparison with the surviving historical buildings, the size of the plots, the morphological features of built spaces and the evolution of the building fronts. With this analysis it was possible to attest the more recent evolution of buildings, the distinct types of windows, doors and balconies, the variation in the number of floors, the presence of geminate houses, staggered floors, ceiling levels and the elements employed in construction and decoration.[33]

Lastly, we would like to stress that the version of the book analysed in our research was a reprint that included new material published by the District Archive in Braga and consisted of two volumes, the first published in 1989 and the second in 1991.[34] The *Mapa da Cidade de Braga Primas,* dating back to the mid-eighteenth century, provided a general city overview and was projected with high aesthetic concern at an approximate 1:2000 scale. Its author, André Soares, was a prominent baroque architect of Braga, who represented the urban space by conciliating perspective and

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[33] Maria do Carmo Ribeiro, "Braga entre a época romana e a Idade Moderna", pp. 53-55.
[34] André Rybeiro Soares da Silva, *Mapa da Cidade de Braga Primas*.

scale, thus ensuring the proportionality of all represented elements in a rigorous visual three-dimensional projection of the urban space.

Similarly to the *Mapa das Ruas de Braga*, this iconographic source provides a characterization of the urbanism of the city in the mid-eighteenth century. In articulation with the remaining sources, especially Braunio's Map, it makes it possible to identify the main changes introduced to the urban space between the sixteenth and the eighteenth centuries, alongside the morphological continuities, which, when applied to the inner-walled area, were rather significant. In reality, the city mainly grew in its outskirts.

2.1.4. Cartographic Sources

The nineteenth century oversaw the production of the first rigorous cartographic representations of the city, although they exhibit different levels of detail. Among these representations two should be highlighted: one refers to a plan executed with a 1:4000 scale by the army engineers Belchior José Garcez and Miguel Baptista Maciel (map 8),[35] and the other is a map created by Francisco Goullard in 1883-1884, with a 1:500 scale (map 9).[36]

The first map refers to a rigorous and geometric survey of Braga in the eighteenth century and it provides a topographic reading of the city's layout, although the built space was represented as a continuous stain accompanying the streets, failing to individualize the built plots. In addition, this map represented the first document upon which we were able to rigorously map Braga's urban plan for the previous centuries, namely the modern and medieval periods. Through a comparative analysis with Braunio's Map, it is possible to attest small morphological changes occurring in the inner-walled area from the sixteenth century up to the nineteenth century, whilst also proposing a valid cartography for the medieval period.

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[35] Belchior José Garcez and Miguel Baptista Maciel, *Planta da Cidade de Braga, escale 1/4000* (Lisboa: Instituto Cartográfico e Cadastral Português, undated).
[36] Plan at a 1:500 scale, consisting of 32 sheets belonging to Braga City Council, whom we thank for the concession of the plan in a digital format.
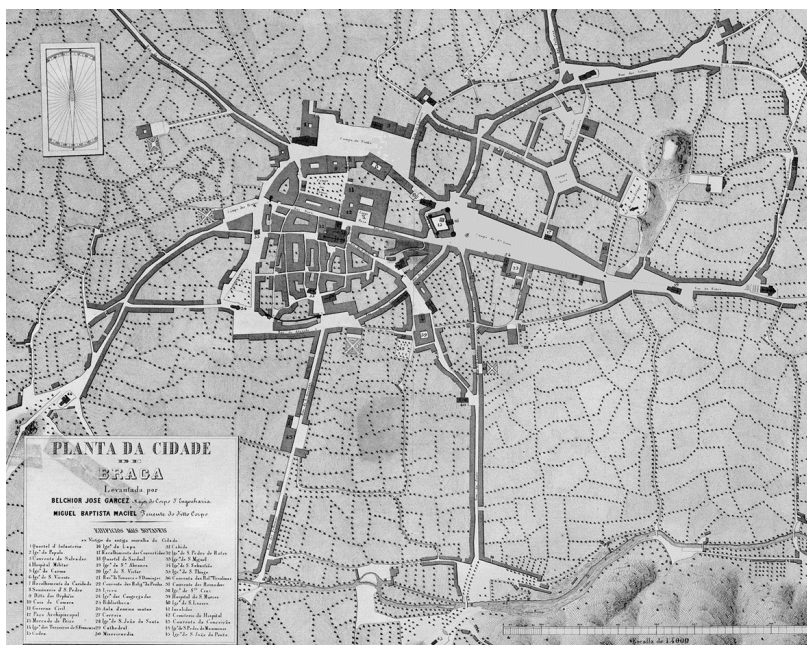
Map 8. Braga's city map in the 19th century (by the Authors)

Map 9. Braga's city map in 1883-1884 (sheet 15) (by the Authors)

The second map, created by Francisco Goullard, is a source of great relevance to the analysis of urbanism in the 1800s, as it recorded, in detail, the entire street system, the quarters and the plots, differentiating the built areas from the connected backyards, while also discriminating different soil uses. In addition, this map documented the urban plan prior to the main urban transformations conducted in the late nineteenth century around the inner-walled area, changes that completely destroyed the medieval urban layout.[37]

With regard to the adopted cartographic sources, we should also mention the 1946/1948 photograms and the topographic surveys conducted in 1968 and, again, in 1992. These maps correspond to the cartographic support used as the digital base for the present work.

2.1.5. Historical Constructions and Fossilized Marks in the Urban Landscape

The reuse of urban structures throughout the gradual occupational stages of urban centres is an evident and common process for a great number of historical cities. In fact, despite the necessary renewals emerging from the extended use of buildings, cities assimilated and integrated constructive elements built in the earlier periods of occupation.[38] This process is responsible for the preservation of architectonic elements in almost all historic cities until the present day. Sometimes it occurs in more obvious ways, as is generally the case with the most important historical buildings, while in other cases the preserved elements are rather dissimulated within the current urban fabric. In Braga's case, this process can be observed in the city's defensive system and in some of its built heritage. In an attempt to recover some of these evidences, fieldwork studies have been conducted within a few town

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[37] Maria do Carmo Ribeiro, *Braga entre a época romana e a Idade Moderna*, p. 172; Manuela Martins and Maria do Carmo Ribeiro, "Em torno da Rua Verde", pp. 18-19.

[38] Nuray Ozaslan, "Historic urban fabric: source of inspiration for contemporary city form" (York: University of York, PhD Dissertation, 1995); Roberto Cavallo, Susanne Komossa, Nicola Marzot, Meta Berghauser Pont and Joran Kuijper, *New Urban Configurations* (Amsterdam: IOS Press, 2014).

quarters, alongside the listing of features of its historical buildings, through the application of archaeological methodologies.[39]

The tasks of locating, identifying and analysing the historical constructions have been aided by the available historical iconography, particularly by Braunio's Map, the *Mapa das Ruas de Braga* (MRB), and the *Mapa da Cidade de Braga Primas*. In this sense, it was possible to establish analogies between the current constructions and their graphic representations when compared to former times, which in some cases goes back as far as the Middle Ages.

In terms of the medieval defensive system, it was possible to identify, locate and map some of its constructed sections, that had been reused for other purposes, especially as plot boundaries, but also as the support for adjoining constructions. This task contributed towards the development of the planimetric proposal for the overall medieval defensive system.[40]

2.2. Analysis Methodology

The detailed analysis of a city's urban evolution from its genesis until the present day presents a difficult task, mainly due to the transformation processes taking place throughout successive periods of occupation, with different impacts on the city's morphology and on the fragmentary nature and indirect character of the different sources that can document the evolutionary processes. The use of several types of sources becomes paramount in this task and the nature of the different types of data to be used must be as distinct as possible, while contemplating archaeological data, historical documentation, iconography, cartography and even the historical buildings.

The exercise of compiling data emerging from different sources has previously been undertaken for the reconstruction of urban planimetry, as it is needed to produce new information from an interpretation process conducted and based upon the appreciation of the different types of existing testimonies. Equally, it is not always possible to use progressive

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[39] Maria do Carmo Ribeiro, "Braga entre a época romana e a Idade Moderna", pp. 73-271; Luís Fontes, Sofia Catalão and Mafalda Alves, "Arqueologia da Arquitectura em Contexto Urbano: reflexões a partir de três exemplos da cidade de Braga, Portugal", *Arqueología de la Arquitectura*, 7 (2010), pp.105-128.

[40] Maria do Carmo Ribeiro, "Braga entre a época romana e a Idade Moderna", pp. 326-403.

and evolutionary approaches, and on occasion regressive ones become necessary, as they subtract the transformations in the urban layout introduced in later times. In this sense, it is equally relevant to use a rigorous cartographic support, which should be as old as possible and valid for the planimetric and morphological reconstruction of the different occupational phases of the city.

Thus, the digitization of records emerging from different sources, especially through the creation of back offices holding different types of data, which can be qualitative, cartographic, graphic and photographic, and the storing of data referring to key moments of urban consolidation, together with its cross-checking, should contribute towards the production of different interpretative maps, virtual models and detailed reconstructions of distinctive spaces, such as, the street system, the quarters and plots, and the characterization of the built heritage in different periods via distinct output tools, such as CitiEngine.[41]

For the study of Braga's morphological evolution, between the fourteenth and fifteenth centuries, the cartography adopted was a modern map dating back to 1992, commissioned by the city hall. It should be noted that this map was based upon aerial photography, requiring some corrections to be made on the terrain, particularly in terms of the plots (the number of plots, and their size, width and depth). This correction emerged from fieldwork carried out across the different quarters. The graphical data was later digitalized in AutoCAD and the descriptive information included in a database (SIUA-Information System of the Unit of Archaeology).[42] The cartographic maps available for the nineteenth century were also digitalized, considering their relevance to the interpretation of the urban modern and medieval street grid and layout of the plots. The vectorization of these maps contributed towards their articulation with the current city map (1992), thus, performing the oldest rigorous cartographic support from which a regressive approach can be conducted, one that sought to suppress the changes introduced during the modern era. In this sense, the use of the *Mapa das Ruas de Braga*, dating back to the mid-eighteenth

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[41] Natália Botica, Manuela Martins, Maria do Carmo Ribeiro and Fernanda Magalhães, "3D representation of the urban evolution of Braga using the CityEngine tool", *Managing archaeological heritage: past and present* (Kristiansand: Vest-Agder Museum, 2015), pp. 132-143.
[42] Manuela Martins and Paulo Bernardes, "A multi-disciplinary approach for research and presentation of *Bracara Augusta*", *Archeologia e Calcolatori*, 11 (2000), pp. 347-357.

century, was equally an extremely relevant source that documented the plotting and the construction features of the 1800s, some of which were of medieval origin.

Taking the nineteenth century topographic plan as the starting point, a reconstruction of the seventeenth and eighteenth centuries' urban plans was intended through the cross-checking of data emerging from the written sources, particularly from the *Índices dos Prazos das Casas do Cabido*, with the data provided by the nineteenth century historical iconography represented by both the *Mapa das Ruas de Braga* and the *Mapa da Cidade de Braga Primas*.

Data emerging from the analysis of the written sources was chronologically ordered and loaded into the SIUA database, respecting the different quarters of the modern city, as well as the plot system. In the sixteenth and eighteenth century cases it was possible to associate information to each plot by referring to the emphyteusis, especially in terms of names, occupations, marital statuses and plot typologies. This procedure was systematically adopted, allowing the reconstruction of the sixteenth century urban plan proposal. In this case, Braunio's Map, created in 1594, and the *Memorial das Obras que D. Diogo de Sousa mandou fazer*, from the sixteenth century, were very important sources.

Using the sixteenth century plan proposal as a base, we have tried to analyse and map the urban morphological features from the fourteenth and fifteenth centuries documented by the written sources *1° Livro do Tombo do Cabido* (1369 and 1380) and *Índices dos Prazos das Casas do Cabido* (from 1406), which are particularly significant for the restitution of the street system and the Low Middle Ages urban quarters. By also using the written sources, we are able to document some important constructive changes during the fourteenth and fifteenth centuries that impacted on the city's urban layout, namely the new defensive perimeter, the castle,[43] and the archiepiscopal palace, alongside the emergence of new streets within the walled area of the city.

Although most of the medieval wall is no longer visible, it was possible to identity its layout due to the intensive fieldwork that has been carried out inside the quarters, where various remains are still noticeable

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[43] José Marques, "O Castelo de Braga (1350-1450)", *Mínia*, 8 (1986), pp. 5-34; Maria do Carmo Ribeiro, "Braga entre a época romana e a Idade Moderna", pp. 315-500.

and are preserved as part of the current urban plot system. This task was
articulated with the analysis of the iconographic sources, namely
Braunio's Map and the *Mapa da Cidade de Braga Primas*, where the
medieval wall was represented. This type of procedure was also adopted
for the reconstruction proposal of the medieval castle, which benefited
from an analysis conducted inside present buildings, which had preserved
parts of this old heritage, in articulation with cartography and historical
iconography available for modern times. This unveiled the different
changes the castle endured up to its partial demolishing at the beginning of
the twentieth century.[44]

Taking into consideration that the genesis of the medieval city is to be
found in the northeast quadrant of the ancient Roman town, and that it was
from this sector that the city of the fourteenth and fifteenth centuries grew,
we deemed it necessary to contemplate Braga's urban morphology since
the Roman era.

The primary sources for the reconstruction of the Roman city and the
Late Antique urban morphology are the relevant available archaeological
data emerging from the Rescue Project of Braga, since 1976.[45] Aerial
photography and the cartography of modern Braga, dating back to 1992,
served as secondary sources. In a similar fashion to what occurred in
earlier periods, the archaeological sources fostered a High Medieval
morphological approach for Braga. In this case, the nineteenth century
topographic map created by B. Garcez and M. Maciel also performed as a
primary source, as it represents the first rigorous cartographic base for the
city's urban plan prior to the great urban transformations that impacted the
inner-walled urban space in the second half of the nineteenth century.

Meanwhile, the main sources for the Low Medieval morphological
reconstruction were the nineteenth century topographic maps, in terms of
the restitution of the street layout, and the *Mapa das Ruas de Braga*
(MRB), from the eighteenth century, used for the analysis of the plots and
the reconstruction of the defensive system. The available historical
documentation and iconography, in particular the well-known Braunio's
Map from 1594, were used as secondary sources.

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[44] Eduardo Pires de Oliveira, "Documentos para a História do Museu D. Diogo de
Sousa II", *Cadernos de Arqueologia*, 2/2 (1985), pp. 179-194.
[45] Manuela Martins, Luís Fontes and Armandinho Cunha, "Arqueologia urbana em
Braga", pp. 81-88; Manuela Martins and Luís Fontes, "*Bracara Augusta*. Balanço
de 30 anos de investigação arqueológica", pp. 111-124.

From the articulated analysis of the different types of available sources and through the adoption of a methodology that valued the simultaneous application of progressive and regressive approaches, as well as the production of new information, it was therefore possible to elaborate an interpretation proposal for Braga's urban morphology, during the fourteenth and fifteenth centuries.

## 3. Braga's Urban Morphology in the Fourteenth and Fifteenth Centuries

Starting in the late thirteenth century, written sources documented the growth of the urban area of Braga towards the north and northeast parts of the city, through the emergence of new streets, the widening of the defensive system that started to integrate new gateways, and the construction of a new archiepiscopal palace and castle, at the very beginning of the fourteenth century. Equally, data recovered by archaeology demonstrated that the northern part of the High Medieval defensive system was reorganized in the early fourteenth century, culminating with the expansion of the defensive wall towards the north and northeast areas of the ancient High Medieval city. The new Low Medieval wall incorporated the previous suburbs and therefore it duplicated the High Medieval city area (map 10).[46]

Both the High and Low Medieval walls are documented in the archaeological area of 'Escola Velha da Sé', where part of a tower is also present.[47] The remains show that the construction of the High Medieval wall involved the destruction of part of a Roman block, which had remained occupied throughout Late Antiquity. Although the exact date of the construction of this wall still remains open to discussion, it is certainly later than the eighth century. In fact, despite the political and administrative dismantling relating to the establishment of the Arab rule on the south of the Iberian Peninsula from 711, Braga and its wide diocesan region, corresponding to the territory of what is now north Portugal, remained populated not only according to archaeology but also

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[46] Maria do Carmo Ribeiro and Luís Fontes, "The Urban Morphlogy of Braga", pp. 37-44.

[47] Excavation carried out by the Archaeological Office of the city of Braga, directed by Dr. Armandino Cunha, whom we thank for the information. Fernanda Magalhães, "Arquitetura doméstica em Bracara Augusta" (Braga: Universidade do Minho, Master Dissertation, 2010); Fernanda Magalhães, "Arquitetura doméstica em *Bracara Augusta*", *Interconexões*, 1 (2013), pp. 13-30.

to the written sources, namely the documented activity of the Bishop of Odoário in the second half of the eighth century.[48] So, bearing in mind the archaeological and documentary written sources, we can accordingly suggest that the construction of the High Medieval defensive perimeter of Braga, with a significant reduction of the city's previous urban area, passing from the 40 hectares of Late Antiquity to just over 15 hectares, could be closely related to the territorial reorganization undertaken by Alfonso III of Asturias, who in 873 'restored' and bound the city of Braga.[49]
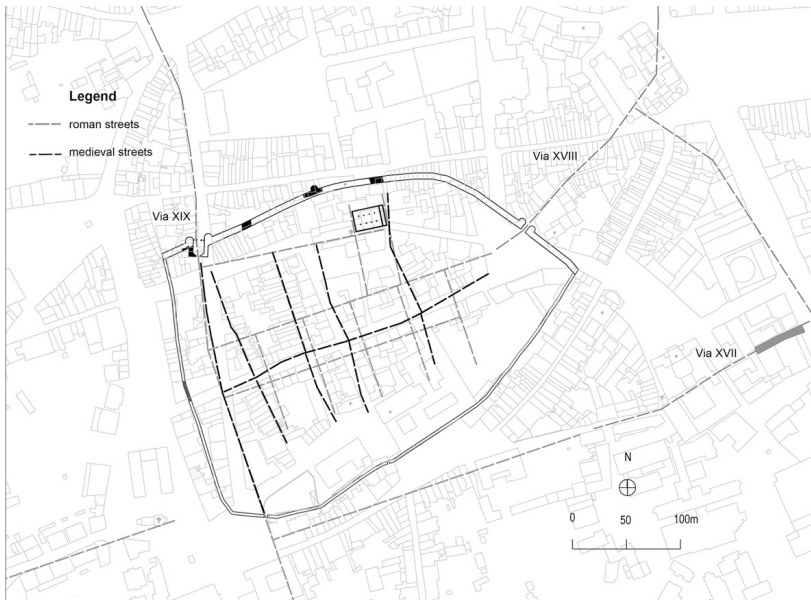
Map 10. Reconfiguration of the urban space in 9th-13th centuries (by the Authors)

It was also possible to find one of the doors of the High Medieval wall,[50] aligned with the medieval *Rua Verde* street, which fossilized the

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[48] Avelino Jesus da Costa, *Liber Fidei Sanctae Bracarensis Ecclesiae* (Braga: Assembleia Distrital de Braga, 1965), pp. 44-51 (doc. No. 22); Avelino Jesus da Costa, *O bispo D. Pedro e a organização da diocese de Braga*, (Braga: Edição Irmandade de S. Bento da Porta Aberta1997), p. 48.

[49] Luís Fontes, "O Norte de Portugal entre os séculos VIII e X", pp. 443-474.

[50] Excavation carried out by the Archaeological Office of the city of Braga, directed by Dr. Armandino Cunha, whom we thank for the information.

general orientation of the northern part of the Roman *cardus maximus*.[51] Nevertheless, it was not possible until the present moment to document other archaeological evidences of the perimeter of the High Medieval wall, but we would suggest that it must correspond to the one recognized in the Low Medieval perimeter, in both the south and east areas. In fact, as a result of the excavations carried out in different areas close to the crossing of the medieval wall, two phases of stone plunder of the Roman buildings have been systematically documented, which must be related to the construction of any public amenities.[52] One is clearly chronologically associated with the construction of the Low Medieval wall, and it is possible to consider that the other phase could be dated back to the eighth-ninth centuries, based on the ceramic contexts. We are surely faced with indirect evidence of the wall's construction during the High Middle Ages, whose perimeter would be coincident with the later wall, except on the north side, where it was defined by part of the Lower Roman Empire wall, constructed between the end of the third century and the beginning of the fourth century.[53] This fortification would only be definitively destroyed and replaced in the fourteenth century with the Fernandina wall.[54]

In the intramural area of the medieval city the episcopal headquarters, set up in Late Antiquity as an architectural urban marker and as a religious, political and administrative hub, joined the civil and ecclesiastical powers through the figure of the bishop. Built at the beginning of the fifth century, it remained in use until the eleventh century, when Bishop D. Peter launched the major project of a new

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[51] Manuela Martins and Maria do Carmo Ribeiro, "Em torno da Rua Verde", pp. 11-44.

[52] This is the case documented in the archaeological excavations in the area known as R. Afonso Henriques, nº 42-56, and the one of the Ex Albergue Distrital; Manuela Martins, Armandino Cunha, Fernanda Magalhães and Cristina Braga, "Metamorfoses de um espaço urbano. A sequência de ocupação da Zona Arqueológica da R. Afonso Henriques nºs 42 a 56, em Braga", *Oppidum*, 7 (2014), pp. 111-127; Ana Catarina Torres, "Sequência de ocupação da Zona Arqueológica do Ex. Albergue Distrital. Contributo para a análise evolutiva e funcional de uma unidade doméstica em Bracara Augusta", (Braga: University of Minho, Master Dissertation, 2014).

[53] Francisco S. Lemos, José M. F. Leite and Luís Fontes, "A muralha de Bracara Augusta e a cerca medieval de Braga", pp. 121-132.

[54] Luís Fontes, Francisco Sande Lemos and Mário Cruz, "'Mais Velho' que a Sé de Braga", pp. 137-164.

Romanesque cathedral.[55] This conditioned the further evolution of the city in the High Middle Ages, once it saw its northeastern area restricted by the episcopal complex. In fact, the cathedral remained peripheral until the fourteenth century, as it was constructed very close to the north side of the Roman and High Medieval wall. Only with the duplication of the city in the Low Middle Ages did the cathedral become a central point of the city's organization, clearly separating the episcopal city (north side) and the civil city (south side) (map 11).
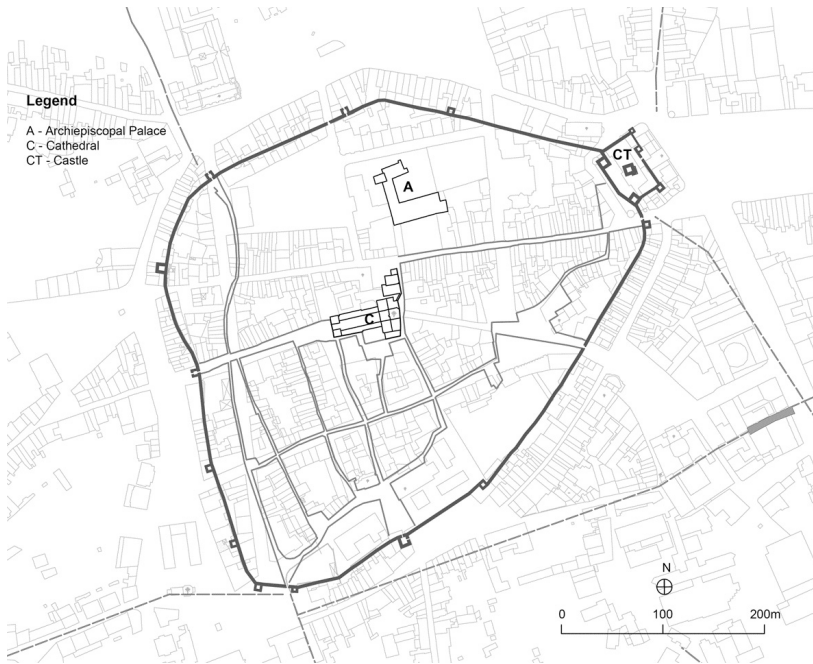
Map 11. Braga's medieval urban plan (by the Authors)

As noted above, the genesis of the Low Medieval urban morphology of Braga is to be found in the small borough formed in the northeast quadrant

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[55] Avelino Jesus da Costa, *O Bispo D. Pedro*, pp. 213-223; Manuel Real, "O projecto da catedral de Braga, nos finais do século XI, e as origens do românico português", *Actas IX Centenário da Dedicação da Sé de Braga. Congresso Internacional* (Braga: Faculdade Teologia/Cabido de Braga, 1990), pp. 435-511; Luís Fontes, Francisco Sande Lemos and Mário Cruz, "'Mais Velho' que a Sé de Braga, pp. 137-164.

of the Roman town, between the ninth and the thirteenth centuries. Its defensive system resulted from the reuse of the Low Roman Empire wall, and the edification of a new southern perimeter, enclosing an urban area no greater than 15 hectares. Under these circumstances, the town plan for the fourteenth and fifteenth centuries clearly reflected two distinctive urban developments. One corresponded to an area occupied since the Roman times, and the other resulted from a growth process that started to integrate the rural surroundings on the northern side of the city.

Despite the restructuring processes carried out in the area where the medieval city overlapped the previous Roman areas, which were also occupied in Late Antiquity, the streets and quarters stood out due to their regularity, mainly in the inner area corresponding to the High Medieval city. The layout formed in this sector was defined by five streets running N/S and another running E/W, corresponding to the medieval *Travessas* district, well documented since the late fourteenth century in the *1° Livro do Tombo do Cabido*. In reality, the logic of the medieval street structure's orientation for this sector was based on maintaining its Roman origin, although the medieval axes had been decentred from the ancient Roman ones and were less rectilinear and often sinuous. Comparing the medieval reality with the Roman street network, we can verify that the number of axes with N/S orientations remained practically identical to the ancient secondary *cardines* existing in the same area in the Roman town; the northern part contained only one extra street, which was connected to the opening of a new wall door. In terms of the number of street axes running E/W, there was a clear reduction in the number of *decumani* and only one street retained that orientation, the medieval 'Travessas' street.

However, in general terms, there was no exact match between the Roman and medieval street networks and only the medieval *Rua Verde* kept its Roman axis, corresponding to the fossilized layout of the northern *cardus maximus*.[56]

It is possible that the general process of constructing over the Roman circulation axes documented throughout Late Antiquity could have caused the disappearance of the E/W Roman axes and the aggregation of the old Roman quarters, thus, forming broader medieval quarters of rectangular shape and N/S orientation.[57] Nevertheless, we do not have enough

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[56] Manuela Martins and Maria do Carmo Ribeiro, "Em torno da Rua Verde", pp. 11-44.
[57] Manuela Martins and Maria do Carmo Ribeiro, "Em torno da Rua Verde", p. 30.

archaeological data to prove this assumption and further information is required to understand why this process could have affected the *decumani* more than the *cardines*.

Equally problematic is the formalization process of the medieval blocks and plots. In fact, it is possible that the fragmentation of the former Roman quarters into different family houses, documented in Late Antiquity,[58] could have been accompanied by the spontaneous growth in height of separate houses recorded since the High Middle Ages, and have originated their progressive fossilization into small plots. However this is a question that only can be solved by further archaeological research and we must wait for more data to understand the process of medieval plot formation more clearly.

In general, we may consider that the medieval street system was only slightly hierarchized, once it included streets with roughly the same width. The plots were narrow and long and the constructions were located nearby the streets, with backwards-facing and annexed buildings existing inside the quarters.[59]

In contrast with the south area of the city, it should be noted that the northern area bounded by the fourteenth century wall maintained very rural features and mainly included properties owned by the Chapter in the surroundings of the archiepiscopal palace.[60] This was characteristic of the area for a number of centuries, and explains the differences between the two urban areas that still exist today.

In terms of the medieval urban plan, another type of morphology clearly stood out within the city and seems to have resulted from the growth process of the urbanized area, integrating the previous rural suburbs, alongside spaces developed near to the wall or the wall's doors.[61] In this case, it was mainly the street axes and the irregular quarters that clearly characterized the urban layout (map 11).

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[58] Manuela Martins, Fernanda Magalhães, Raquel Martínez Peñín and Jorge Ribeiro, "The housing evolution of Braga", pp. 35-91.

[59] Maria do Carmo Ribeiro, "Braga entre a época romana e a Idade Moderna", p. 500.

[60] Maria do Carmo Ribeiro, "Braga entre a época romana e a Idade Moderna", p. 488.

[61] Maria do Carmo Ribeiro, "Braga entre a época romana e a Idade Moderna", pp. 336-337.

The exact boundary of the medieval wall, and in particular the location of its doors, sheds some light on the articulation they had with the primary inner-walled circulation axes, and with the street system connecting the city with urban centres growing around the churches located in the outskirts, mainly nearby the areas of old Roman necropolises.[62]

Final Considerations

The adopted approach in terms of the analysis of Braga's urban fabric in the Late Middle Ages sought to recreate an analysis model to evaluate the urban configuration of the city, valuing the potential offered by the different types of available sources, namely information emerging from archaeology and written sources, cartography and historical iconography, as well as, from the analysis of historical constructions. We are aware of the difficulties of our approach and particularly of the issues that have to be solved, primarily related with the genesis processes of the medieval street network and the shape of the quarters and lots. It also seems clear that the urban structure of Braga in the late Middle Ages is quite indebted to that which was formalized in the preceding period, between the tenth and thirteenth centuries, for which we have less archaeological evidence and few written sources for the city's study.

However, we believe that only the articulated use of the emerging results in archaeological and historical research can contribute towards the production of new information that could help to formalize better plan proposals for the medieval city of Braga. In some cases the regressive analysis of historic and cartographic data can also provide some useful conjectures to be later validated by archaeological research and cartographic analysis. In fact, despite the urban changes documented in Braga between its Roman origin and the present, the extraordinary preservation of some structural features of Braga's urban fabric performed a particularly key condition for the study of the city's urban evolution.

Braga's medieval urban features were not very distinctive from the ones reproduced by the earliest existing iconography portraying the sixteenth century city. Equally, the changes recorded in the city between

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[62] Maria do Carmo Ribeiro and Arnaldo Sousa Melo, "O crescimento periférico das cidades medievais portuguesas (séculos XIII- XVI): a ação dos mesteres e das instituições religiosas', *Evolução da paisagem urbana :cidade e periferia*, ed. by Maria do Carmo Ribeiro and Arnaldo Sousa Melo (Braga: Centro de Investigação Transdisciplinar "Cultura, Espaço e Memória", 2014), pp. 86-91.

the Late Middle Ages and the nineteenth century matched the typical changes occurring during the Renaissance period and the eighteenth century, being well-individualized morphologically and, in some cases, topographically decentred. The same trends occurred with the nineteenth century alterations, namely the opening of some new streets regulating part of the medieval and modern street system, with the consequent destruction of its corresponding plots that are safely registered in the cartographic records of the nineteenth century.