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GRAPHIC RECONSTRUCTION OF A VANISHED ARCHITECTURAL HERITAGE: THE 'PUERTA DE LA CARNE' IN SEVILLE

RECONSTRUCCIÓN GRÁFICA DE UN PATRIMONIO ARQUITECTÓNICO DESAPARECIDO: LA PUERTA DE LA CARNE EN SEVILLA

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Highlights:

- An important lost gate from Seville's historic city wall is graphically reconstructed to emphasise its significance and open a future discussion on its potential physical reconstruction.
- Historical images are analysed using new digital media; site transformations over the centuries are studied and the London Charter of 2006 is considered.
- The 3D modelling of the gate, based on a photograph (c. 1855) and 16th-century treatises, is integrated with the 3D scanning of the current environment using game-engine technology.

Abstract:

Seville was at the height of its commercial prosperity in the 16th century. It was then decided that its walled enclosure gates should be renovated using a Renaissance architectural language, following a report by the architect Hernán Ruiz II from 1560. The Puerta de la Carne was located near the *Judería* district and close to the city's slaughterhouse. Asensio de Maeda directed the work execution around 1577. After being deemed an urban obstacle, the gate was demolished in 1864. For its graphic reconstruction, the 2006 London Charter, the 2012 Seville Principles and other bibliographic references have been considered. To document and illustrate significant architectural and urban transformations, important historical images have been gathered and analysed for the first time: Bambrilla (1585–1588), Hoefnagel (1598), Olavide (1771), Hurtado (1786), an anonymous oil painting (c. 1800), Ford (1831), Domínguez Bécquer (1838), and Vigier (1851), among others. A photograph commercialised by Gaudin Frères (c. 1855) served as the basis for the three-dimensional (3D) graphic reconstruction. Treatises on 16th-century architecture have been consulted to sketch architectural details of its composition, which was similar to the Puerta Real, attributed to Hernán Ruiz II. A plan of urban alignments from the late 19th-century has helped to determine its position, supported by the 3D scanning of the current environment. Game-engine rendering technology was used to integrate and visualise all these data. Thus, the aim is to highlight the Puerta de la Carne, a valuable sample of vanished architectural heritage. This research will facilitate debate regarding its potential material reconstruction as a symbol of identity and a source of progress for the city.

Keywords: historical images; terrestrial laser scanning; 3D reconstruction; disappeared heritage; city gate; Hernán Ruiz

Resumen:

Sevilla se encontraba en pleno apogeo comercial en el siglo XVI. Se decidió entonces renovar las puertas de su recinto amurallado con un lenguaje arquitectónico renacentista, siguiendo un informe de 1560 del arquitecto Hernán Ruiz II. La Puerta de la Carne se ubicaba junto al barrio de la Judería y cerca del matadero de la ciudad. Asensio de Maeda dirigió la ejecución de la obra hacia 1577. Tras ser considerada como un obstáculo urbano, fue demolida en 1864. Para su reconstrucción gráfica se han considerado la Carta de Londres de 2006, los Principios de Sevilla de 2012 y otras referencias bibliográficas. Para documentar e ilustrar destacadas transformaciones arquitectónicas y urbanas se han reunido y analizado por primera vez importantes imágenes históricas: Bambrilla (1585-1588), Hoefnagel (1598), Olavide (1771), Hurtado (1786), un óleo anónimo (h. 1800), Ford (1831), Domínguez Bécquer (1838) y Vigier (1851), entre otras. Una fotografía comercializada por Gaudin Frères (h. 1855) ha servido como base para la reconstrucción gráfica tridimensional (3D). Se han consultado tratados de arquitectura del siglo XVI para croquizar los detalles arquitectónicos de su composición, que era similar a la Puerta Real, atribuida a Hernán Ruiz II. Un plano de alineaciones urbanas de

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finales del XIX ha permitido precisar su posición con el respaldo del escaneado 3D del entorno actual. Para integrar y visualizar todos estos datos, se han usado técnicas de motor gráfico de videojuegos. De este modo, se trata de poner en valor la Puerta de la Carne, un importante patrimonio arquitectónico desaparecido. A partir de esta investigación podrá debatirse su futura reconstrucción material como símbolo de identidad y fuente de progreso para la ciudad.

Palabras clave: imágenes históricas; escaneado láser terrestre; reconstrucción 3D; patrimonio desaparecido; puerta de la ciudad; Hernán Ruiz

1. Introduction

1.1. Urban and historical context, and authorship data

The historic wall of Seville protected the city from external attacks and floods of the Guadalquivir River, functioned as a means of fiscal control, and confined the population during epidemic times. In its early stages, the layout was modified to adapt to changes in the course of the Guadalquivir and the city's growth. During the Almohad period (1147–1248), its configuration was consolidated (Jiménez Maqueda, 1998; Valor Piechotta, 1996), which remained in place after the Castilian conquest in 1248 (Pacheco Morales-Padrón, 2021).

The vanished Puerta de la Carne was one of the most important gates in Seville. It was located near the *Santa Cruz* neighbourhood, the *Huerta del Retiro* of the *Real Alcázar*, the *Judería* district, and a significant synagogue that also served as a mosque, now known as the Church of *Santa María la Blanca* (Gil Delgado, 2015).

An important urban axis derived from this temple, the current Calle (Street) *Santa María la Blanca*, at its intersection with *Calle Cano y Cueto*, also known as *Calle de los Muros de la Puerta de la Carne*, as it runs parallel to the wall's layout (Collantes de Terán Sánchez et al., 1993, vol. II, p. 353; Núñez-González, 2021, vol. II, p.56). Above this stretch of wall flowed the irrigation channel that supplied water to the *Real Alcázar*, originating from the *Caños de Carmona* and passing through the *Puerta de Carmona*. This imposed a significant limitation on the height of the passageway of the *Puerta de la Carne* (González de León, 1839, p. 486) (Figs. 1 & 2).

In the *Libro del Repartimiento*, it was referred to as the *Puerta de la Judería* due to its proximity to the Jewish quarter, and at least since 1425, it would be known as the *Puerta de la Carne* (Albardonedo Freire, 2001, pp. 255–256). This name is related to its external surroundings, where the sacrifice of animals for the city's consumption took place. It should be noted that the main butcheries were located in the Alfalfa and its vicinity at the end of the public thoroughfare that began at this gate. Furthermore, near the slaughterhouse, pre-killing cattle shows were commonplace, as noted later.

Seville became a very prosperous city in the 16th century due to its monopoly on trade with the Americas. This splendour enabled the construction of significant buildings such as the *Archivo de Indias*, the new Town Hall, the *Casa de la Moneda*, and the *Hospital de las Cinco Llagas*, now the Parliament of Andalusia, among others (Lleó Cañal, 1979).

Figure 1: Surroundings of the disappeared Puerta de la Carne: 3D aerial view in Google Earth, 2024 [accessed on 3 October 2024].

(a) (b)

Figure 2: Surroundings of the disappeared *Puerta de la Carne*: a) *Calle Cano y Cueto*; b) *Calle Santa María la Blanca* and *Calle Cano y Cueto*. September 2024.

By the mid-16th century, it was decided to replace the medieval gates of its walled enclosure with wider ones, eliminating the angled entrances. This was intended to renew its image with a Renaissance architectural language, aiming to evoke the Roman triumphal arches located in strategic positions (Lleó Cañal, 1979). The layout would follow a report from the Cabildo of Seville in 1560 by the esteemed architect Hernán Ruiz II, who held the position of Master Builder of the City. This would include designs that are no longer known today (Albardonedo Freire, 2002, p. 263; Jiménez-Maqueda, 1999, p. 154).

When Hernán Ruiz II passed away on 21 April 1569, the entire set of these new gates had not been executed. However, no scholar has questioned the formal proximity to his other works. Based on his architectural language, the *Puerta Real* has been attributed to him (Gámiz-Gordo, Antón, & Barrero-Ortega, 2023), which bears great similarity to the *Puerta de la Carne*, as well as the *Puerta de Triana* (Gámiz-Gordo & Barrero Ortega, 2019), although the execution of the latter was directed by Asensio de Maeda and Diego de Velasco (Vallecillo López, 2024).

Autographic testimonies from two other master builders of the city who produced designs for the *Puerta de la Carne* have been preserved. According to a document from 1571, the architect Benvenuto Tortello, successor to Hernán Ruiz II, created a design for this gate in his absence and prior to his death. This design, now lost, was attached to that document (Albardonedo Freire, 2001, p. 55).

The involvement of Asensio de Maeda is documented in the execution of four gates (Albardonedo Freire, 2001, p. 57): the *Puerta de la Carne* in 1577, the *Puerta de Carmona* in 1578, the *Postigo del Carbón* in 1585, and the *Puerta de Triana* in 1585. It should be noted that no documentation regarding his appointment as Master Builder of the City, a position responsible for creating designs, has been preserved. According to a letter from Asensio de Maeda dated January 1578, he had not received any salary for nearly two years for producing designs for the Customs building, the *Puerta de la Carne*, various fountains, and for numerous visits during their execution, during which he made moulds and estimates.

In another related document, it was stated that he was owed 150 ducats for his designs, described as an "excessive price for such little work", possibly because it was a reform of previous designs. It can be assumed that these would be construction details, as Asensio de Maeda's professional career was closely linked to construction, and he sought to "adorn the manual aspects of his trade with the theoretical embellishment typical of a designer" (Cruz Isidoro, 1995, p. 111, 127).

It is possible that Maeda introduced new formal elements, such as the rusticated pilasters incorporated into the *Puertas de Triana*, *de la Carne*, and *de Carmona*. Although these details were not common in other works by Hernán Ruiz II, the overall architectural ensemble undoubtedly reflects his aesthetic taste of a mannerist character, typical of that late Renaissance period.

According to the transcription of a plaque that once existed on the interior façade of the *Puerta de la Carne*, D. Francisco de Zapata, Count of Barajas and assistant to Seville, commanded its renovation, completed in 1577 (Pozuelo Calero, 2005). However, according to documents from that same year, the old outer barbican had not yet been removed, its surroundings had not been paved, nor had the water drainage been resolved. Additionally, on 11 February 1577, a section of the wall nearby collapsed. The works would be completed by around 1579, although further work was undertaken in subsequent years. Furthermore, various documents detail renovations or repairs to the Puerta de la Carne in 1696, 1796, and 1847 (Albardonedo Freire, 2001, p. 55, 58, 61). It is also known that a tribune with an altar was placed where a painting of Our Lady of Help was venerated (González de León, 1839, p. 486).

By the mid-19th century, after raising the ground level during the paving of the *Ronda de Capuchinos*, the passage of carts was likely impeded due to the low clearance of the opening of this gate, as the water conduit to the *Real Alcázar* from the *Caños de Carmona* ran above it. After being deemed an obstacle for the city, it was decided to demolish the gate, which occurred between March and July 1864 (Suárez Garmendia, 1986, p. 207).

1.2. References on virtual reconstruction of disappeared heritage

Architectural and urban heritage has been significantly revalued in recent decades. Adequate graphic documentation is essential for its knowledge, dissemination, management, and conservation, in accordance with UNESCO recommendations (ICOMOS, 1966). In cases of heritage loss or destruction, intangible values can sometimes be safeguarded if graphic documents exist that allow for virtual or real reconstruction (Boeykens, Himpe, & Martens, 2012).

Despite the challenges in defining reconstruction theories or methodologies that are universally applicable to all types of disappeared heritage, reviewing previous experiences can offer guidelines that remain open and adaptable. In this context, some relevant references are detailed below.

Firstly, it is important to mention the London Charter of 2006, which addressed the use of digital visualisation in cultural heritage research and dissemination (Denard, 2009). This document set general principles to promote scientific and technical rigour in reconstructions and visual recreations. Regarding purposes and methods, the most suitable approaches should be employed in each case to achieve the proposed objectives. The level of certainty and the degree of hypothesis or certainty in each representation must be determined.

The recommendations of the London Charter concerning documentary sources are also of interest. In this regard, this research has undertaken a comprehensive collection and analysis of historical images to document and examine the transformations of the studied model and its environment over time. These images are essential for the development and understanding of the digital model.

To further develop the London Charter and enhance its applicability in the digital visualisation of archaeological heritage, additional, more detailed postulates were formulated (López-Menchero Bendicho, 2011). These were included in the Principles of Seville, ratified by ICOMOS at its 19th General Assembly held in New Delhi in December 2017 (ICOMOS, 2017).

These principles defended that virtual archaeology should contribute to both society and understanding of heritage, with clear objectives in each case. They also emphasised the importance of interdisciplinarity and the endorsement of professionals from various fields of knowledge. This research on the *Puerta de la Carne* brings together interests from archaeology, architecture, history, drawing, and urban landscape.

Another principle referred to digital visualisations of destroyed original archaeological remains. The authenticity of the visualisation is paramount, with the degree of certainty in reconstructing or recreating buildings and environments from the past being clearly recognisable. It is essential to differentiate between what is real and authentic and what is not. Authenticity must be a permanent objective in all virtual reconstruction.

The Principles of Seville also emphasised the importance of the final quality of any digital visualisation. This should be evaluated based on the rigour of the graphical reconstruction process, rather than solely on the visual appeal of the result. To achieve appropriate levels of rigour and veracity, digital reconstruction must be supported by solid historical and archaeological research. Buildings should not be displayed isolated or out of context. The reconstruction of the *Puerta de la Carne* has focused on its period of greatest architectural splendour, from the 16th to the 19th centuries. During this extended timeframe, significant transformations occurred in its urban and landscape environment, making the gathered historical images crucial, with their veracity also assessed. Ultimately, the decision was made to represent the disappeared *Puerta de la Carne* within its current urban landscape, in an effort to foster future debate—beyond the academic or research context—regarding its potential material reconstruction.

A considerable amount of literature exists on the digital reconstruction of architectural heritage, covering a wide range of methodologies tailored to specific case studies. A recent example is a book that gathers and compares experiences of digital restoration (Trizio, Demetrescu, & Ferdani, 2023). Other noteworthy European documents (DCHE Expert Group, 2020) outlined basic principles and types of 3D digitisation of cultural heritage, which were summarised by Antón, Amaro-Mellado, Rico-Delgado, & Díaz-Cañete (2024). These authors concluded that 3D digitisation aids in the conservation and exploration of heritage, but does not replace physical preservation or guarantee digital conservation, necessitating sound practices and policies. Additionally, a recent article on the virtual reconstruction of architectural heritage (Rodríguez-Moreno, 2024) addressed the identification and representation of uncertainties (Apollonio, Fallavollita, & Foschi, 2025).

Finally, regarding the disappeared gates of Seville's city wall, it is worth highlighting two works that combine historical and digital images. One addressing the *Puerta de Triana* did not include data from archaeological excavations (Gámiz-Gordo & Barrero-Ortega, 2019), while another article on the *Puerta Real* documented the archaeological remains of the historic wall that are still preserved today (Gámiz-Gordo, Antón, & Barrero-Ortega, 2023).

2. Objectives and methodology

As an introduction, key documentary data on the historical and urban context of the *Puerta de la Carne* have been outlined, and references regarding the reconstruction of lost heritage have been reviewed. This research aims to highlight the significance of this important architectural heritage. To this end, two specific objectives are proposed:

- To visualise and understand the urban and architectural transformations of the site.
- To graphically reconstruct the gate with geometric accuracy in its current urban context.

To achieve these objectives, the following methodology is followed:

- Images from the 16th to the 19th century (views, plans, and photographs) are collected and analysed.
- As the basis for reconstruction, a photograph marketed by Gaudin Frères in 1858 is rectified. To sketch the geometric details of the composition, historical images and 16th-century architectural treatises are consulted. For the graphic reconstruction in the current urban setting, the terrestrial laser scanning digitisation technology was used. Finally, game-engine techniques were used to integrate and visualise the results. Throughout all

phases, this research considered the principles of the 2006 London Charter, the 2012 Seville Principles (ratified by ICOMOS in 2017), and additional bibliographic references.

This work could foster a future debate on the potential material reconstruction of the *Puerta de la Carne*, contributing to the revitalisation of this sector of the city.

3. Images from the 16th to 19th centuries

The city of Seville boasts a rich legacy of historical images that provide valuable insights into its urban and architectural transformations over time. These graphic sources are of great interest for understanding its heritage, alongside other historical or archaeological documentary sources, in relation to the current reality.

Consequently, this research has undertaken an extensive search for images of the *Puerta de la Carne* and its surroundings from the second half of the 16th century. Although many of these images have been reproduced in various publications (Cabra-Loredo & Santiago-Páez, 1988; Calvo Serraller, Carrete Parrondo, Lleó Cañal, & Valdivieso, 1991; Díaz-Zamudio & Gámiz-Gordo, 2019; Oliver & Serrera Contreras, 1989; Olmedo Granados, Cortés José, Fernández Gómez, & Regidor Jiménez, 2022), they had not previously been compiled and analysed as a whole. For their proper interpretation, the context of each image has been considered, including its technique, the scale of representation, the level of detail, and the skills or interests of the authors, with the aim of assessing their documentary significance and plausibility.

In 1585, Ambrosio Brambilla, an architect, draughtsman, and engraver (active between 1579 and 1599), published the first representation of the walled ensemble of Seville from an elevated viewpoint (Gámiz-Gordo & Díaz-Zamudio, 2019). This view was published, with minor variations, in Volume IV of the well-known *Civitates Orbis Terrarum* (Braun & Hogenberg, 1588) (Fig. 3). The city's gates were drawn schematically and were identified in the legend. The *Puerta de la Carne*, still unmodified, is depicted without particular prominence. In its external surroundings, the names of the neighbourhood of *San Bernardo*, the *Huerta del Rey*, and the monastery of *San Agustín* alongside the *Caños de Carmona*, the main water supply for the city, were indicated.

Figure 3: View detail of Seville, *Civitates Orbis Terrarum* vol. IV, 1588. Private collection.

The *Puerta de la Carne* also appeared in another view published in Volume V of the so-called *Civitates Orbis Terrarum* (Braun & Hogenberg, 1598), taken from the east of the city, in the vicinity of the *San Bernardo* suburb (Fig. 4). The legend includes the name of the author, Joris Hoefnagel (1542-1600), who visited Seville around 1564-1567. The original drawing that served as the basis for the engraving is preserved in the Albertina collection (Vienna), without significant differences (Gámiz-Gordo & Díaz-Zamudio, 2019).

The legend identifies various landmarks in the vicinity of the *Puerta de la Carne*. Among the mounds, emphasised by the draughtsman, are the Monastery of San Agustín (N), the Tagarete stream (cc), and the aqueduct of the *Caños de Carmona* (O). Prominently featured in the city's skyline is the Giralda. At the same time, the legend indicates several intramural landmarks, such as the *Real Alcázar* (H), the *Iglesia Mayor* (I), and the Church of *Santa Cruz* (L). Additionally, several towers and gates or postern entrances of the wall are detailed, but not referenced in the legend: the *Puerta de la Carne* appears between the *Puerta de Carmona* and a postern in the *Huerta del Retiro* of the *Alcázar*, located in the current Murillo Gardens, near the Water Tower. Its drawing is schematic, flanked by two towers and a barbican.

In the foreground, a dung heap (R) is depicted, corresponding to the elevation known as *Monte del Rey* until the 20th century, near the *Caños de Carmona*, where the city's refuse would accumulate. Notably, the slaughterhouse (K) is illustrated as an elongated building next to which a bullfighting scene appears. The text included on the reverse of the print highlights the agrarian and recreational character of the landscape in this sector of the city's periphery. Furthermore, it was said that near the slaughterhouse, spectators enjoyed the spectacle of watching bulls fight each other. At the same time, large dogs were unleashed to provoke them, rousing the bulls into a furious state before they were killed, as the dogs lunged at them, attacking with their horns and throwing them into the air.

These bullfighting scenes were also mentioned by Alonso Morgado in his *Historia de Sevilla* (de Morgado, 1587, pp. 52–53): "... outside the city at the *Puerta de la Carne* is the slaughterhouse, resembling a large farmhouse with its pens and warehouses and all their accessories. And some viewing points that overlook a good square, where summer bulls are regularly run and speared."

In the archives of the Provincial Council of Seville, a floor plan is preserved, included in an inventory book of props (supports), attributed to Vermondo Resta around 1603-1628 (Núñez-González, 2021, t.II, p. 56). It depicts the plot of a house located at 7 *Cano y Cueto* Street, which still exists today (Fig. 5). Its corner with *Santa María la Blanca* would be replaced by a new building in the late 19th century. The plan includes a scale in Castilian yards and reflects the layout of the wall up to the *Puerta de la Carne*, highlighting the narrowness of the street. According to a drawing by Richard Ford from 1831 and a photograph by Vigier from around 1851, this house would have three storeys, as discussed later.

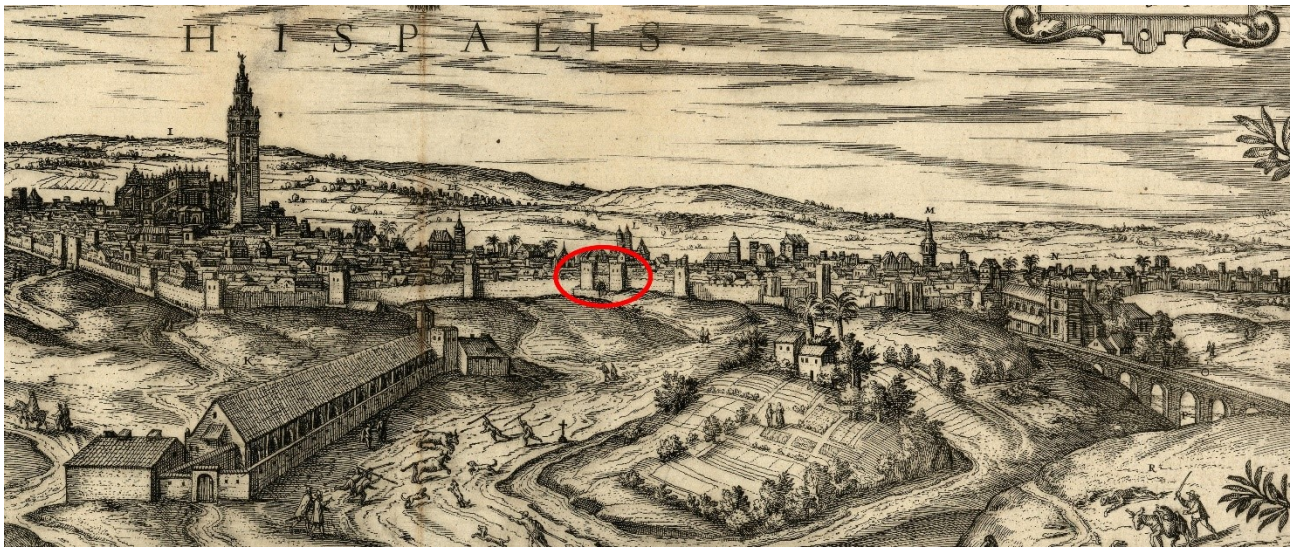

Figure 4: View detail of Seville, Joris Hoefnagel, *Civitates Orbis Terrarum*, vol. V, 1598. Private collection

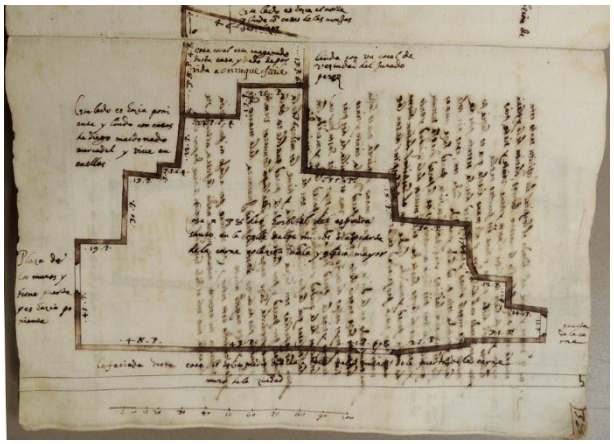

Figure 5: House in *Calle de los Muros* (present street *Cano y Cueto*, *7*), next to the *Puerta de la Carne*. Drawing attributed to Vermondo Resta, h, 1603-1628. *Hospital del Espíritu Santo*, file 15, protocol 38.

The first known plan of the city of Seville, dated 1771 and referred to as Olavide's plan, schematically represented the *Puerta de la Carne* and the topography of its surroundings. The buildings of the *Matadero* (slaughterhouse), the *Rastro* (a market), and the *Tagarete* stream were depicted, detailing the wall of the nearby *Huerta del Retiro* (Olmedo Granados, Cortés José, Fernández Gómez, & Regidor Jiménez, 2022, p. 33) (Fig. 6).

The *Puerta de la Carne* also appeared in plans preserved in the Simancas Archive, featuring proposals for the location of a new *Cuartel de Caballería* (Cavalry Barracks). Among these, the surroundings outside the walls depicted in a plan signed by Antonio Hurtado on 4th May 1786, are particularly noteworthy (*Archivo General de Simancas*. Reference: MPD, 23, 043) (Fig. 7). To the left, the *Puerta de Carmona*, the convent of *San Agustín*, and the *Caños de Carmona* are shown. Towards the centre, in the area known as the *Huerta de Espantaperrillos*, the outline of an initial proposal for the placement of the new barracks is depicted, which began construction, but was not completed due to deficiencies in the terrain (Ponce Ortiz de Insagurbe & Sánchez Sánchez, 2004, p. 125, 176, 212). On the right is the location ultimately chosen for the building, now the headquarters of the Provincial Council of Seville, alongside the slaughterhouse, the Tagarete stream, and the ring road.

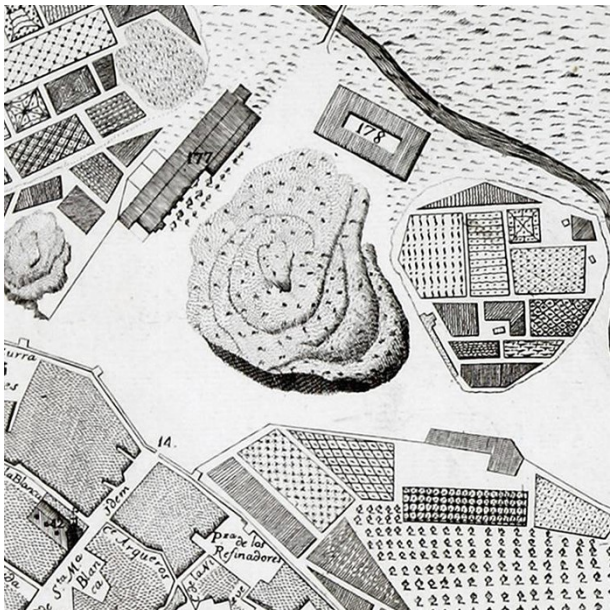

Figure 6: Detail of Olavide's plan, 1771. *Real Academia de la Historia,* Madrid, C-011-002-17 [https://www.sevilla.org/cartografia-historica (accessed on 15th July 2024)].

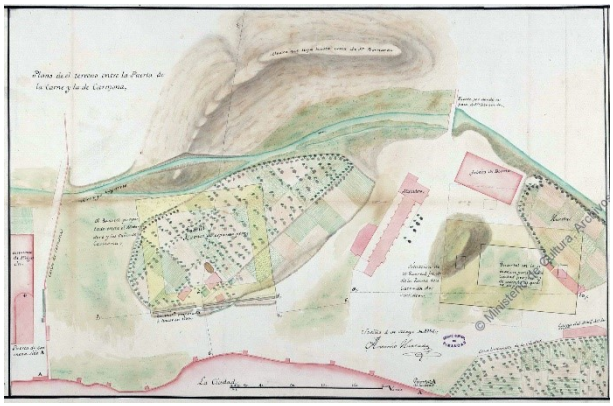

Figure 7: Placement proposal for the *Cuartel de Caballería* near the *Puerta de la Carne*. Antonio Hurtado, 4th May 1786. *Archivo General de Simancas*. Sig. MPD, 23, 043.

A unique view of the surroundings outside the *Puerta de la Carne* can be found in an anonymous painting from around 1800 (Oliver & Serrera Contreras, 1989, p. 282) (Fig. 8). It features a festive scene with bulls and horses in front of the gate, set against the backdrop of the city walls, the slaughterhouse, the *Rastro* building, and the new Cavalry Barracks, which had already been constructed. In the background, the so-called *Monte del Rey*, the *San Bernardo* neighbourhood, the Tagarete bridge, the Porta Coeli convent, the Royal Artillery Factory, and the *Cruz del Campo* are visible in the distance. In the lower right, an idealised fragment of the upper section of the *Puerta de la Carne* is depicted, viewed from the balcony of the corner house at the intersection of *Santa María la Blanca* and *Cano y Cueto* streets. The lower part of the painting also shows the crown of the city wall and many people watching the spectacle.

Figure 8: Anonymous oil painting, c. 1800 (Oliver & Serrera Contreras, 1989, p. 282).

The Hispanist traveller Richard Ford sketched nearly a hundred views of Seville during his stay between 1830 and 1833. Many of these detailed the exterior of the city's walls, and one of them, dated 1831, depicted the *Puerta de la Carne* (Rodríguez-Barberán, 2007, p. 177) (Fig. 9) along with the wall of the Retiro garden, with the Giralda in the background. Next to the doorway, a small building or kiosk can be seen, which also appears in later images. Behind the wall, on *Cano y Cueto* Street, two houses with elevated balconies are illustrated, from which spectators could enjoy the aforementioned bullfighting events. The details of both houses correspond with existing structures and other 19th-century images mentioned later.

Figure 9: Drawing of the *Puerta de la Carne* and a stretch of Seville's historic wall. Richard Ford, 1831. Ford family's collection.

Based on Olavide's plan, Yldefonso Sierra drew another plan in 1837 that illustrates the state of the urban defences after the works carried out in response to the military incursions of the First Carlist War (Olmedo Granados, Cortés José, Fernández Gómez, & Regidor Jiménez, 2022, p. 69) (Fig. 10). The outlines of the city's outskirts were depicted in a much more careful and realistic manner than in Olavide's plan, but the interior of the urban area was left blank. The letter "i" marks the location of the new Cuartel de la Carne, built around 1786 (Ponce Ortiz de Insagurbe & Sánchez Sánchez, 2004, p. 38, 91), which Olavide did not represent. The plan also depicts the San Bernardo neighbourhood, the bridge over the Tagarete stream, and the "Monterrei". Additionally, notes were included regarding the defensive capacity of the walls and new reinforcement works. The "espadón" or battery with a moat, which was constructed next to the studied gate, is also illustrated (Suárez Garmendia, 1999, p. 350).

Figure 10: Detail of Yldefonso Sierra's plan, 1837. Cartoteca del Archivo General Militar de Madrid, PL SE-9/20 [https://www.sevilla.org/cartografia-historica (accessed on 15th July 2024)].

The *Puerta de la Carne* was depicted in an undated oil painting by the artist Joaquín Domínguez Bécquer (Casajús Espinosa, 1838), preserved in the Real Alcázar of Seville (Calvo Serraller, Carrete Parrondo, Lleó, & Valdivieso, 1991, p. 194). In 1838, this view was published as an illustration in Vicente Mamerto Casajús's work entitled "Albúm Sevillano" (Calvo Serraller, Carrete Parrondo, Lleó, & Valdivieso, 1991, p. 83, 356) (Fig. 11). It was republished in 1842 and plagiarised by Basilio Tovar in 1878 (Tovar, 1878). The painting shows a clear height difference between the wall sections flanking the gate on both sides. In the background on the right, there is a peculiar tower that Richard Ford did not draw in 1831, possibly the church tower of *San Bartolomé*, rendered in a highly idealised manner. However, the details of the house–viewpoint tower at the corner of *Santa María la Blanca* and *Cano y Cueto* streets are reasonably accurate, which Ford also illustrated, and which still retains that same formal configuration today (Fig. 12).

Of undeniable value is the photograph taken around 1851 by the Viscount of Vigier (Fig. 13), included in one of the

first photographic collections dedicated to the city of Seville shortly after the emergence of this graphic technique. It confirms the veracity of the views discussed above, especially of the upper floor of the house at 7 *Cano y Cueto* Street. This house has a plan from the early 17th century previously mentioned and was depicted by Ford in a manner consistent with its current state (Fig. 14). The differing heights of the sections of the wall on either side of the gate can also be seen, along with the kiosk that existed on one of its sides and the poor state of preservation of the ensemble.

Another photograph of the *Puerta de la Carne*, taken from a more frontal perspective, was marketed by Gaudin Frères in 1858 (Sánchez Gómez, 2011, p. 72) (Fig. 15), shortly before its demolition in 1864. Through the opening, the façade and balcony of a house that still stands at 15 *Santa María la Blanca* Street can be seen. This photograph is of great documentary value, as it highlights its architectural details, which correspond with the views by Ford and Domínguez Bécquer. This photograph would later serve as the basis for a view published by Parcerisa and de Madrazo (1856, pp. 362–363). Typically, photographs of Spain marketed by Gaudin Frères have been dated shortly before the publication of their catalogue around 1858 (Sánchez Gómez, 2011, p. 68). The similarity between the two images made it possible in this research to assert that the photo was taken around 1855 (Fig. 16).

The loss of the defensive value of the city's walls led to their abandonment and gradual deterioration. By the mid-19th century, they were regarded as an obstacle to urban progress, and the various gates, including the *Puerta de la Carne*, were demolished between 1857 and 1869. The demolition of the *Puerta de la Carne* in 1864 marked the loss of a highly significant piece of the city's architectural heritage.

Figure 11. *Puerta de la Carne* in its environment: Litography by Domínguez Bécquer, 1838. National Library, Madrid.

Figure 13. Photograph of the *Puerta de la Carne* and its environment, Vigier, c. 1851. Private collection of *Duque de Segorbe*.

Figure 12. Corner of *Calle Santa María la Blanca* and *Cano y Cueto*. Current state.

Figure 14. Detail of the upper floor of the house in 7 *Cano y Cueto* Street. September 2024.

Figure 15: Photograph of the *Puerta de la Carne* and its environment, Gaudin Frères, c. 1855. Carlos Sánchez's Private collection.

Figure 16: Litography of the *Puerta de la Carne* (Parcerisa & de Madrazo, 1856, p. 362–363). Private collection.

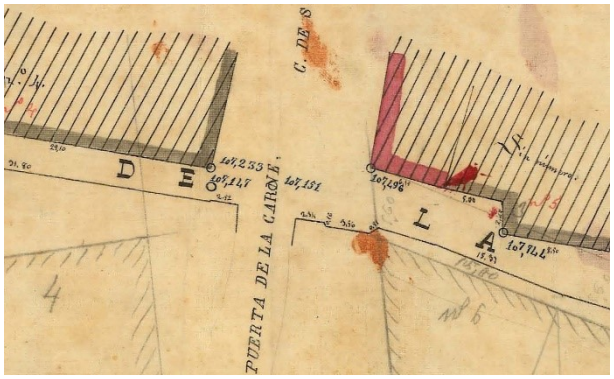

Figure 17: Detail of the façade alignments plan showing the location of the *Puerta de la Carne*, c. 1900. *Ayuntamiento de Sevilla*, *Gerencia de Urbanismo*, 10/2021.

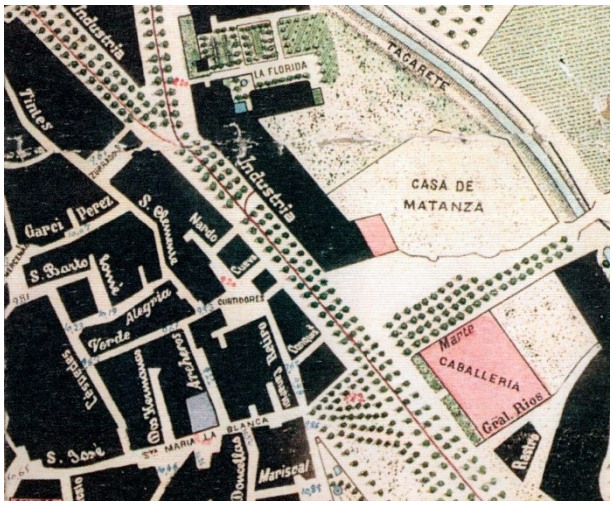

Figure 18: Surroundings of the *Puerta de la Carne* in Juan Talavera and Ricardo María Vidal's *Plano de Sevilla y sus afueras*, 1890. *Biblioteca Nacional de España* [MV/14; Signatura: MA00035323; CDU: 460.353 Sevilla].

To understand the transformations in the surroundings of the *Puerta de la Carne* at the end of the 19th century, the façade alignment plans of the historic centre preserved in the Seville City Council are of great interest. These were drawn to scale and include dimensions and levels. One of them features different line types to represent the approved façade alignments from around 1900. However, the metric data collection was conducted earlier, as it details the position of the wall and the opening of the *Puerta de la Carne*. Additionally, pencil sketches outline proposed alignments for new blocks of buildings in the gate's external surroundings (Fig. 17).

Also of interest are other general plans of Seville and its periphery, which reflect the urban transformations in the vicinity of the *Puerta de la Carne* at the end of the 19th century. For example, a plan by Juan Talavera and Ricardo María Vidal, dated 1890 (Olmedo Granados, Cortés José, Fernández Gómez, & Regidor Jiménez, 2022, pp. 106–107) (Fig. 18), shows a newly built block outside the walls, adjacent to the disappeared gate and others nearby. Additionally, tree alignments are depicted converging at that location, which had become a focal point in the urban perspective.

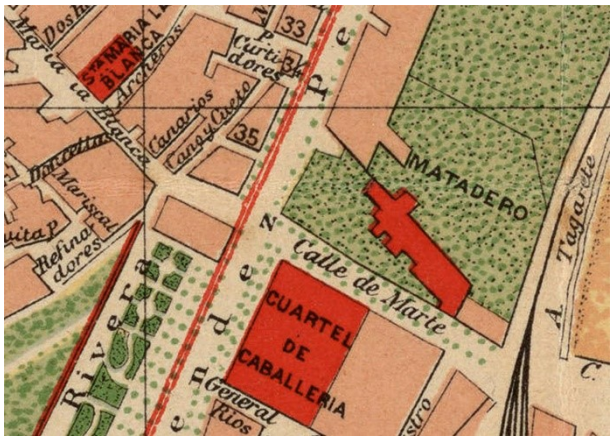

Figure 19: Detail of the *Puerta de la Carne*'s surroundings in the Seville plan directed by Benito Chías and published by Alberto Martín, c. 1913. Private collection.

Figure 20: Outdoor market near the former *Puerta de la Carne*. Postcard published by José Bustillo, c. 1915. Private collection.

In another plan of Seville, directed by Benito Chías and published by Alberto Martín around 1913 (Olmedo Granados, Cortés José, Fernández Gómez, & Regidor Jiménez, 2022, pp. 124–125) (Fig. 19), a newly built block is depicted next to the vanished *Puerta de la Carne*. This development resulted in the loss of the long-distance view of this area from the newly established Catalina de Rivera gardens, which took over part of the Huerta Real with a new layout.

Nevertheless, the area would continue to be a busy access point to the historic centre, maintaining significant commercial activity, as depicted in a postcard published by José Bustillo around 1915 (Fig. 20). The postcard shows a lively outdoor market between the two newly constructed blocks outside the city walls.

4. Formal composition

The *Puerta de la Carne* was one of the most beautiful gates of Seville's city walls. It was composed of two superimposed and clearly differentiated volumes (Fig. 21). As previously mentioned, the design of its passageway was influenced by the height of the water channel that flowed towards the *Real Alcázar* over the adjacent wall sections, originating from the *Caños de Carmona*. According to the Sevillian chronicler Ortiz de Zúñiga (1677), it had identical façades on both its exterior and interior sides.

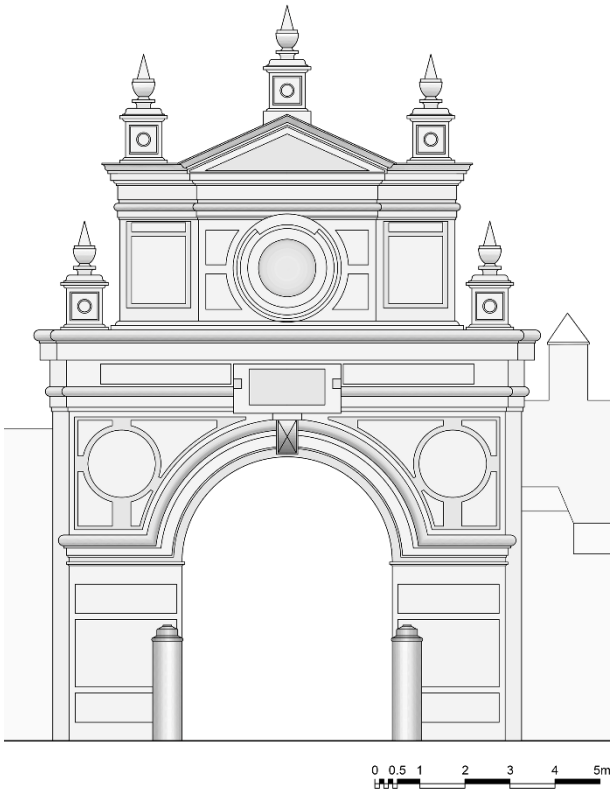

Figure 21: External elevation of the vanished *Puerta de la Carne*. 2024.

The lower volume featured rusticated masonry on its lateral solid sections, topped with a moulding from which the central semi-circular arch sprang. This arch had archivolts that extended horizontally, with a decorated keystone featuring a corbel. In Spain, it was common for the height from the ground to the keystone to be one and a half times the width of the passageway. However, in this case, that proportion was not achieved, possibly due to the limitation imposed by the water conduit running over the wall. This lower volume was crowned by a sort of entablature, with a second impost and frieze (interrupted by a central cartouche) and a perimeter cornice with slight setbacks at its corners. Above all this, pedestals were placed as bases for the stone pinnacles, a characteristic feature in the work of Hernán Ruiz II.

The plaques and inscriptions included in the *Puerta de la Carne* are known through the transcriptions by Ortiz de Zúñiga (1677), and their literary authorship has been attributed to Licentiate Francisco Pacheco (Pozuelo Calero, 2005). On the gate exterior, in two circular medallions on its lower volume, it read: "POTENTISSIMO PRINCIPE" on the left, and the Romanised municipal initials "SENATVS P.Q.H." (*Populus Que Hispalensis*) on the right. Above the arch's keystone, a cartouche stated: "CONDIDIT ALCIDES RENOVAVIT IULIVS VRBEN. RESTITVIT CHRISTO FERDINANDVS TERTIVS HEROS". This refers to Seville's legendary figures: *Hercules built the city, Julius Caesar renewed it, and the hero Ferdinand III restored it to Christ*.

The upper volume, smaller in size, was divided into three sections. The central area, topped with a triangular pediment, was flanked by two slightly recessed sections, crowned by the same continuous cornice that completed the pediment. Plaques with additional inscriptions, also transcribed by Ortiz de Zúñiga, were placed here. On the

left, it read: PHILIPPO II. REGI CATHOLICO PIO. FOELICI AVGVSTO, and on the right: INSTAVRATORI PACIS JVRIS AEQ QVE CONSERVATORI. These inscriptions dedicated the structure to *the Catholic King Philip II, pious, fortunate, augustus, restorer, and conservator of peace*.

At the centre of the main body, another circular medallion featured the city's coat of arms. The composition was finished with acroteria placed on the top of the cornices, at the ends and at the apex of the pediment. On the interior façade, other inscriptions indicated that the gate had been restored in 1577 during Francisco de Zapata's tenure as the city's mayor. Additionally, the gate was dedicated to Saints Leander and Isidore, the patron saints of Seville.

The ensemble composition shows a clear formal relationship with the now-destroyed *Puerta Real* in Seville (Fig. 22a), attributed to Hernán Ruiz II (Gámiz-Gordo, Antón, & Barrero-Ortega, 2023), and with his *Libro de Arquitectura*, a manuscript preserved in the library of the Higher Technical School of Architecture in Madrid (Ruiz, c. 1569). Furthermore, there are notable similarities with certain prints from Sebastiano Serlio's architectural treatise (Serlio, 1552), which Hernán Ruiz II may have used as a reference (Fig. 22b). These architectural compositions are particularly similar due to the smaller upper volume, the triangular pediment enhanced by acroteria or pinnacles, the circular medallions, and the inclusion of inscriptions.

It is reasonable to assume that the materials used for the construction of the *Puerta de la Carne* would have been similar to those employed in other city gates, such as stone and brick, according to documents related to its demolition, preserved in the Municipal Archive of Seville (Public Works Section: "File for the demolition of the *Puerta de la Carne*"). The gate was likely built with limestone from *El Puerto de Santa María* and *Espera* (municipalities in the province of Cádiz), likewise used in other significant 16th-century works in Seville. Future archaeological excavations may confirm whether the foundations and stone ashlars from the gate base are preserved beneath the current ground level, which is higher than in the 16th century.

(a) (b)

Figure 22: a) Elevation of the disappeared *Puerta Real* in Seville, attributed to Hernán Ruiz II. Own elaboration, 2023; b) Print of the Architecture Treatise by Sebastiano Serlio, 1552. *Biblioteca de la Universidad de Sevilla*, *Fondo Antiguo* [https://archive.org/details/HArteR06T02/page/n109/mode/2up]

5. Graphic reconstruction in the current urban environment

5.1. 3D digitisation

The digitisation of the *Puerta de la Carne*'s current surroundings was conducted through 3D scanning, specifically using terrestrial laser scanning (TLS) technology. A Leica Geosystems BLK360 G1 unit (Leica Geosystems, 2018a) was positioned at 15 stations throughout the area to ensure the geometry capture of the adjacent façades, pavements, and that of the house with a tower viewpoint located at one of the corners (Fig. 23).

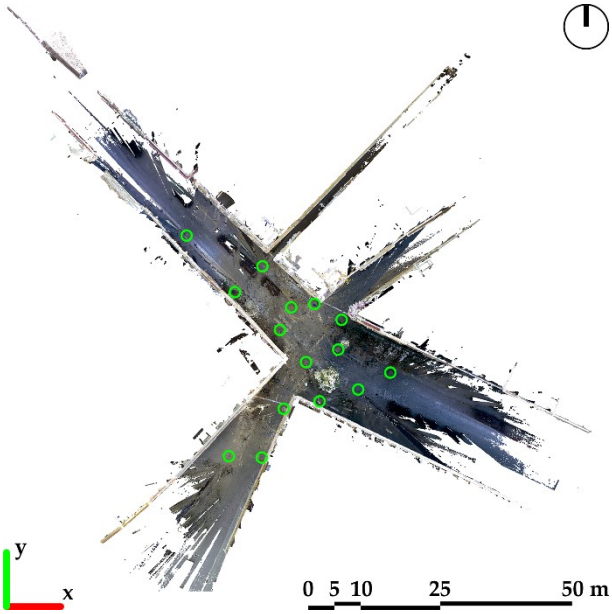

Figure 23: Site map of the TLS survey.

The Leica Cyclone FIELD 360 application (Leica Geosystems, 2018b) was used on an Apple iPad Pro (Apple Inc., 2021) to configure the parameters for the TLS survey, such as an average scanning resolution of 10 mm at 10 m, which was higher at the more distant stations (5 mm at 10 m), and the capture of high dynamic range (HDR) photographs for colour mapping of point clouds. Following the automatic registration (alignment) of the various stations through 58 links using the proprietary software Leica Cyclone REGISTER 360 (Leica Geosystems, 2018c), this process generated a global point cloud with a 38% overlap, a strength of 62%, and a mean cloud-to-cloud error of 7 mm.

The area surrounding the *Puerta de la Carne* is highly crowded, thus requiring the segmentation of the TLS data to remove pedestrians, awnings, and vehicles. The trees were also removed to achieve an unobstructed view of the gate, except for two nearby orange trees, which were segmented and stored in a separate cloud to act as reference tree samples for their subsequent inclusion in the virtual environment. The segmented point cloud contained approximately 418 million points.

In this work, Rhinoceros v. 5.0 (Robert McNeel & Associates, 2014) was employed to locate and create the *Puerta de la Carne* 3D model based on the aforementioned historical graphic documentation (views, plans, and photographs), also considering the TLS point cloud as a dimensional reference for the surroundings. Thus, it was necessary to overlay the historical alignment plan (Fig. 14) with the point cloud for the proper integration of the gate.

Both the historical plan and the point cloud were imported into Rhinoceros, initially aligning the plan to correspond with the northern corner of the intersection of the streets *Cano y Cueto* and 15 *Santa María la Blanca*, the latter being the location of the house–viewpoint tower drawn by Richard Ford. The model units were set to metres from the beginning of the work in Rhinoceros. The alignment plan was used to draw the façades of the northern and western corners in 2D (XY). To minimise human error in line tracing, multiple points were placed along these facades at the midpoint of the line thickness of the historical plan. Subsequently, an automatic line fitting procedure was executed based on these points to complete the tracing of each facade. Similarly, multiple points were inserted into the façades of the point cloud, and the same procedure was employed to trace the scanned facade alignments in the XY plane.

It was decided to establish the same length for the façade lines of the historical plan and those of the TLS point cloud. This allowed for the equidistant division of each segment to generate points (coordinates X and Y, in ground plan) for subsequent alignment. Each set of points, consisting of 65 vertices, was stored as a point cloud in .txt format. The Iterative Closest Point (ICP) algorithm in the open-source CloudCompare software (Girardeau-Montaut, 2016) was used for the automatic alignment of the historical plan façade points with the scanned façade point cloud (serving as the reference for alignment). Since the objective was to fit the historical plan into the current point cloud, the scale adjustment option was activated. Thus, through translation, rotation, and scaling of the point cloud to be aligned (historical plan façade lines), the algorithm applied a scale factor of 0.99265 and a slight anticlockwise rotation of 0.6347º around the Z axis. The Root Mean Squared Error (RMSE) in aligning the historical map (façade traces) with the current scan of the surrounding area was 0.084 m. Given that the alignment plan was hand-drawn with irregular line thicknesses and considering the alterations that the façades may have undergone, this alignment error was deemed acceptable.

With all the above, the aligned façade point cloud was imported into Rhinoceros, and the historical plan was scaled and positioned to achieve the optimal fit with the scanned reality. This served as the basis for locating the graphical reconstruction of the Puerta de la Carne.

5.2. 3D modelling and rendering

The orientation of the historical façade alignment ground plan with the surrounding point cloud has enabled not only the placement of the disappeared *Puerta de la Carne* within its current urban context, but also the acquisition of key measurements for its graphic reconstruction. Thus, the width of the doorway was measured, and the city wall was located. The first of these data was crucial for the perspective rectification of the Gaudin Frères photograph from around 1855 (Fig. 15) to obtain a front-parallel elevation view, thus allowing measurements for the subsequent 3D modelling of the Puerta de la Carne. For this purpose, the freeware Rectif v. 0.80 software (Niethammer, Rothmund, & Joswig, 2009), a command-line tool for image rectification, has been employed. This software processes images in .jpg format and requires the specification of pixel coordinates for the points in the image to be rectified, as well as the resulting coordinates from the transformation, all of which are collected in an ASCII text file in .points format. The extension of the rectified output image is .png.

The alignment plan adjusted to the point cloud showed a width of the doorway opening of 4.67 m, an essential datum for transforming the historical photograph by Gaudin Frères in Rectif. Other points considered include the impost lines that define the semicircular arch of the door and the overall dimensions of the main volume beneath the cornice. The transformation was verified by overlaying circumferences in the commemorative medallions on the façade.

Next, a hand-drawn sketch of the front and lateral elevations of the door was created to define its architectural details (Fig. 24), while considering the shapes and proportions of its main elements in relation to the available photographs (Figs. 13 & 15). Following the basic principles of Renaissance architecture, each element was regarded as part of a whole, with proportions interrelated, adhering to the aesthetic canons of the period.

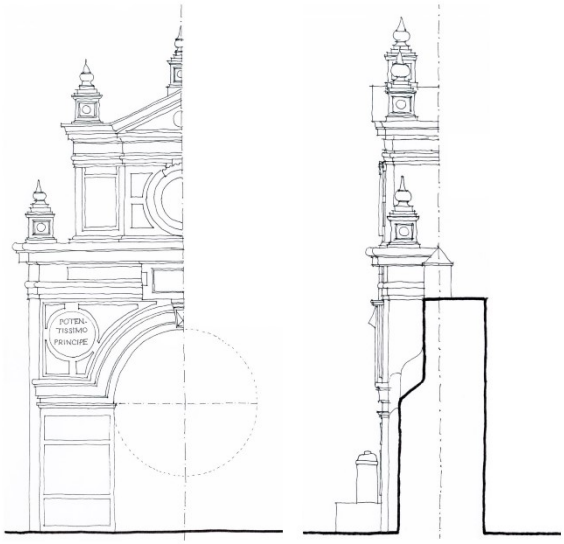

Figure 24: Hand-drawn sketch of the *Puerta de la Carne*.

To define the shapes and dimensions of the mouldings and details, not only were the available photographs consulted, but also Sebastiano Serlio's treatise (1552), which was widely disseminated at the time and likely served as an architectural reference. Additionally, Hernán Ruiz's *Libro de Arquitectura* (c. 1569) was examined since he could be the author of the original design of the *Puerta de la Carne*. Both treatises contain various drawings with details similar to those visible in the photographs of the gate, including mouldings, archivolts, rustication, pediments, and acroteria. These references guided the hand-drawn sketch to define the geometry of each architectural element identified in the photographs, ensuring alignment with the architectural language typical of that period. Of particular interest were images related to the composition of ensembles and moulding designs, such as plates II and LXI of Serlio's Book IV and sheets 126, 131, 141, 142, 144, and 145 of Hernán Ruiz's manuscript.

It should be noted that the original drawing, likely by Hernán Ruiz, has not been preserved. After his death, the construction was directed by another architect, Asensio de Maeda, who employed an architectural language with some formal differences. As mentioned in the introduction, rustication was uncommon in Hernán Ruiz's works, but frequently used by Asensio de Maeda. The design of this gate appears to blend elements characteristic of both architects. Moreover, it remains

uncertain whether the initial design accounted for a specific constraint that may have led to modifications: the aforementioned water conduit leading to the *Alcázar* atop the city wall, which restricted the height of the arch. This arch was built with proportions that were unusual for architects of the time.

In many 16th-century documents, the dimensions of architectural works were specified using measurement units of the time. However, no such document with the original design dimensions of the *Puerta de la Carne* has been found. The earliest drawing with precise measurements is the late 19th-century façade alignment ground plan, which restricts the gate's width in metres. As such, this case does not require the use of historical measurement units.

Typically, plans from that period did not include (metric) annotations; instead, the focus was on the proportions between the parts and the architectural ensemble. Simple geometric tracings are commonly found in Hernán Ruiz's works, as identified in a previous study on the *Puerta Real* of Seville, also attributed to him (Gámiz-Gordo, Antón, & Barrero-Ortega, 2023). However, no such geometric relationships have been identified in the *Puerta de la Carne*, possibly due to alterations to the original design. Consequently, the methodology for this graphic reconstruction has been tailored to this specific case.

After completing the hand-drawn sketch with the geometric definition of the architecture based on the rectified photograph, scaling was performed using CAD software (Rhinoceros 5.0). This process produced a 3D geometric model, which also included the start of the adjacent city wall. The digital reconstruction of the *Puerta de la Carne* involved manual contouring of the volumes and architectural details in elevation (XZ plane). This was due to the inability to scan this disappeared heritage asset, as expected, which would have allowed for the adoption of semi-automated as-built modelling approaches using 3D point cloud data (Antón, Al-Habaibeh, & Queiroz, 2023). From these outlines, flat surfaces were generated that, once extruded, formed the volumes comprising the gate. The dimensions of these 3D solid objects (extrusions and polysurfaces) were constrained through Boolean operations, such as splitting using auxiliary planes and subtraction with volumes from the gate itself. Fig. 22 above shows an elevation of the constructed 3D gate model.

Finally, game-engine technology was used to display the 3D gate model in its current urban context. Among other platforms in the market, Epic Games (2024)'s Twinmotion is an advanced visualisation tool for diverse sectors such as architecture or engineering. This Unreal Engine-based rendering software allows for producing ultra-high definition, photo-realistic images, videos, and virtual-reality immersive experiences, which constitute a useful solution for heritage knowledge and dissemination.

The process was as follows: i) the segmented TLS point cloud was imported into Twinmotion's 3D space as an .e57 file; ii) through the 'geometry' import, the Rhinoceros model of the *Puerta de la Carne* was inserted in its original model coordinates; iii) a representative stock stone material was mapped onto each element of the gate, while diverse parameters were adjusted, such as its scale and offset, roughness and normal intensity; iv) the location of the gate (37.385925 N, 5.986774 W) was introduced to achieve the real Sun position (azimuth and altitude) for the study area depending on the month and time specified; v) a realistic HDRI (High Dynamic Range Image) environment was next included from the library and matched the Sun position; and vi) weather conditions, illumination settings, and camera options (focal length for the image extent, and view parallelism to minimise perspective distortion). The 'Path Tracer' visualisation mode, more realistic than the standard option, was not used, given its incompatibility with point cloud data.

While exploring the gate area, two views were generated by approximately matching the historical photographs in Figs. 13 & 15. The current blocks (not existing in former times) in the southern part of the study area hinder positioning the camera further back to achieve that correspondence. The render images generated for those views were exported as '4K' (3840 x 2160 pixels), with 'high' refinement (Figs. 25 & 26).

Figure 25: Digital reconstruction of the *Puerta de la Carne* in its current environment from outside. Render image based on Gaudin Frères' photograph viewpoint. 2024.

Figure 26: Digital reconstruction of the *Puerta de la Carne*, viewed in its current environment from outside. Render image based on Vigier's photograph viewpoint. 2024.

6. Discussion and conclusions

Around 1560, the esteemed architect Hernán Ruiz II devised a renovation plan for the medieval gates of the Seville city wall. In their place, more functional and monumental gates were constructed, which can be regarded as true symbols of modernity in the 16th century. However, the loss of the defensive value of the walls led to their abandonment in the 19th century. At that time, they were considered an obstacle to progress, and almost all were demolished, including the *Puerta de la Carne* in 1864, one of the most beautiful in Seville.

ICOMOS' recommendations of 1966, the London Charter of 2006, the Seville Principles of 2009—ratified by ICOMOS in 2017—and other relevant guidelines have been referenced. It is worth noting that, to date, no internationally endorsed principles specifically addressing digital visualisations in the architectural discipline have been established.

Regarding the methodology adopted for the *Puerta de la Carne*, this research has gathered and analysed a diverse range of historical images for the first time. This graphic heritage enables a better understanding and visualisation of significant architectural transformations in its urban environment.

The earliest images from the late 16th century depict the door in a very schematic manner, still unaltered. Among the representations of its external surroundings, the plans by Olavide (1771), Hurtado (1786), and other 19th-century images are of particular interest. An anonymous oil painting dated around 1800 illustrates the bullfighting festivities held between the *Puerta de la Carne* and the city's slaughterhouse, located nearby. According to the data presented here, these events would have taken place at least since the 16th century.

The views by Ford (1831) and Domínguez-Bécquer (1838) are also of interest. They detail two privileged viewpoints from which the aforementioned events could be observed, located at the current address of 7 *Cano y Cueto* Street and its corner with *Santa María la Blanca* Street. Both viewpoints still exist today and appear in two exceptional photographs taken by Vigier (c. 1851) and Gaudin Frères (c. 1855). The architectural significance of the *Puerta de la Carne* led to its selection as one of the symbols of Seville featured in these early photographic collections shortly after the advent of this technique.

Plans of interest from the late 19th century were also located, illustrating transformations that occurred after the demolition of the gate and the emergence of new blocks built outside the walls. Among them, a façade alignment plan was particularly valuable, as it was drawn to scale, showing the position of the gate's opening and the wall, including elevations. This plan enabled the precise placement of the gate within its current environment, achieving a margin of error of less than 10 cm by superimposing it onto the point cloud obtained from the 3D laser scanning of the area.

Although no archaeological excavations have yet been conducted at the *Puerta de la Carne* site, a rigorous digital reconstruction was achieved based on the available graphic documentary sources. Future excavations of the underlying remains may corroborate the results obtained regarding its precise location.

The aforementioned photographs by Vigier and Gaudin Frères enabled a rigorous reconstruction of the architectural composition and proportions of the analysed model. Additionally, to sketch and resolve its details, the *Libro de Arquitectura* by Hernán Ruiz II (c. 1569) was consulted. The manuscript is preserved in the library of the Higher Technical School of Architecture in Madrid, along with the Treatise on Architecture by Sebastiano Serlio (1552).

Thus, the methodology followed in this research differs from others that rely on the results of archaeological excavations or where visible remains are preserved. In such cases, a hybrid approach to graphical reconstruction would be more appropriate. This would be based on triangulation (3D meshing) based on point cloud data, while the vanished volumes would be modelled in a theoretical or idealised manner with no deformation. In any case, a differentiated graphic treatment of the existing and the reconstructed is necessary to ensure the authenticity of the digital visualisation, in accordance with the recommendations of the London Charter. Considering that historical images already illustrate the urban context at different times, the digital reconstruction is presented in its current environment. The digital model of the *Puerta de la Carne* has been inserted into the 3D scan, employing game-engine technology to distinguish between what is existing and what has been reconstructed.

In this way, the aim is to highlight the significance of this important architectural and urban heritage that has vanished and to raise awareness of its importance among society and public authorities beyond the realms of research and academia. The site where the *Puerta de la Carne* once stood currently lacks special appeal for the city's residents and many tourists interested in its most everlasting corners. Seville, a city endowed with a rich heritage and notable architectural works, now has the opportunity to reconstruct the *Puerta de la Carne* with scientific rigour. The graphic proposal presented here could transition from drawing to reality in the near future, serving as a symbol of identity and a source of progress for the city.

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Author Contributions

All authors have participated in the entire research process: data acquisition, data curation and processing; conceptualisation, writing, drawing, editing and supervision. All authors have read and approved the published version of the manuscript.

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