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ARCHITECTURAL ANALYSIS OF THE ANTEZANA HOSPITAL: A 15TH CENTURY NOBLE HOUSE IN THE HISTORIC CITY OF ALCALÁ DE HENARES (MADRID, SPAIN)

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ABSTRACT

This paper presents a multidisciplinary study of the Antezana Hospital, a former mid-15th century noble house. The aim is to identify the appearance, the construction techniques and the materials of the original house before becoming a hospital, highlighting the historic value of the building

The methodology combines four main steps. First, the main historical dates were established based upon historic archives, drawings and photographs. Second, a materials characterization was carried out, analysing several samples of bricks and their associated mortars from different chronology and location. Third, a morphological analysis of the different materials and constructive elements was accomplished. And finally, an architectural analysis of the building was performed, allowing an interpretation of the building chronology and relating historical information with materials and construction techniques. This multidisciplinary approach provided new pieces of information that allow identifying the original construction techniques, which was not described in detail in the literature.

According to the results, a link could be established between the Hospital and other contemporary buildings. Some architectural elements were related to other 15th century noble houses located in Toledo, while the materials were found to be similar to those of the original 15th century College of the University of Alcalá, founded by Cardinal Cisneros.

INTRODUCTION

The Antezana Hospital is situated in the historic centre of Alcalá de Henares, a city declared World Heritage Site by UNESCO in 1998. The hospital is located on the main street of the city in a building that was originally the house of a couple of the high Castilian nobility, Luis de Antezana and Isabel de Guzman. It was founded as a charity hospital, according to their will.

The building had a central courtyard with two storeys (fig. 1) and was originally built with rammed earth and brick masonry. The south side of the patio has a gallery of brick columns (fig. 1a) and the other three sides have wooden corridors (fig. 1c). On the west side of the courtyard, there is a baroque chapel dedicated to St. Ignatius of Loyola. The front piece, facing the main street, is occupied by a church which was built in 1800 and, in the north side, there is an attached volume raised in the twentieth century.

According to the will, dated on October 18 of 1483; the two floors of the front volume of their house was donated to the Hospital of Our Lady of Mercy [1]. The care and maintenance of the Hospital was entrusted to a brotherhood, which is still in charge of it, therefore becoming one of the oldest hospitals in Europe still in use. To house the hospital and to allow the house to continue running independently, the brick gallery facing the courtyard was closed with brick walls. Twelve beds for patients were placed in two rooms, one on each level, and a small chapel was incorporated on the ground floor [2]. In 1503, when Isabel died, the hospital occupied the whole building.

Nowadays, it is very difficult to recognize the original configuration of the house, as it happens in many other historic buildings that have been in permanent use and have undergone many changes over time. The main objectives of the study were: to identify the appearance, the construction techniques and the materials of the original house before becoming a hospital; to identify the successive building works undertaken in the building over the past five centuries.

To achieve this goal, a combined study including archeometric characterization of bricks and mortars and an architectural analysis of the morphology of the building is proposed.

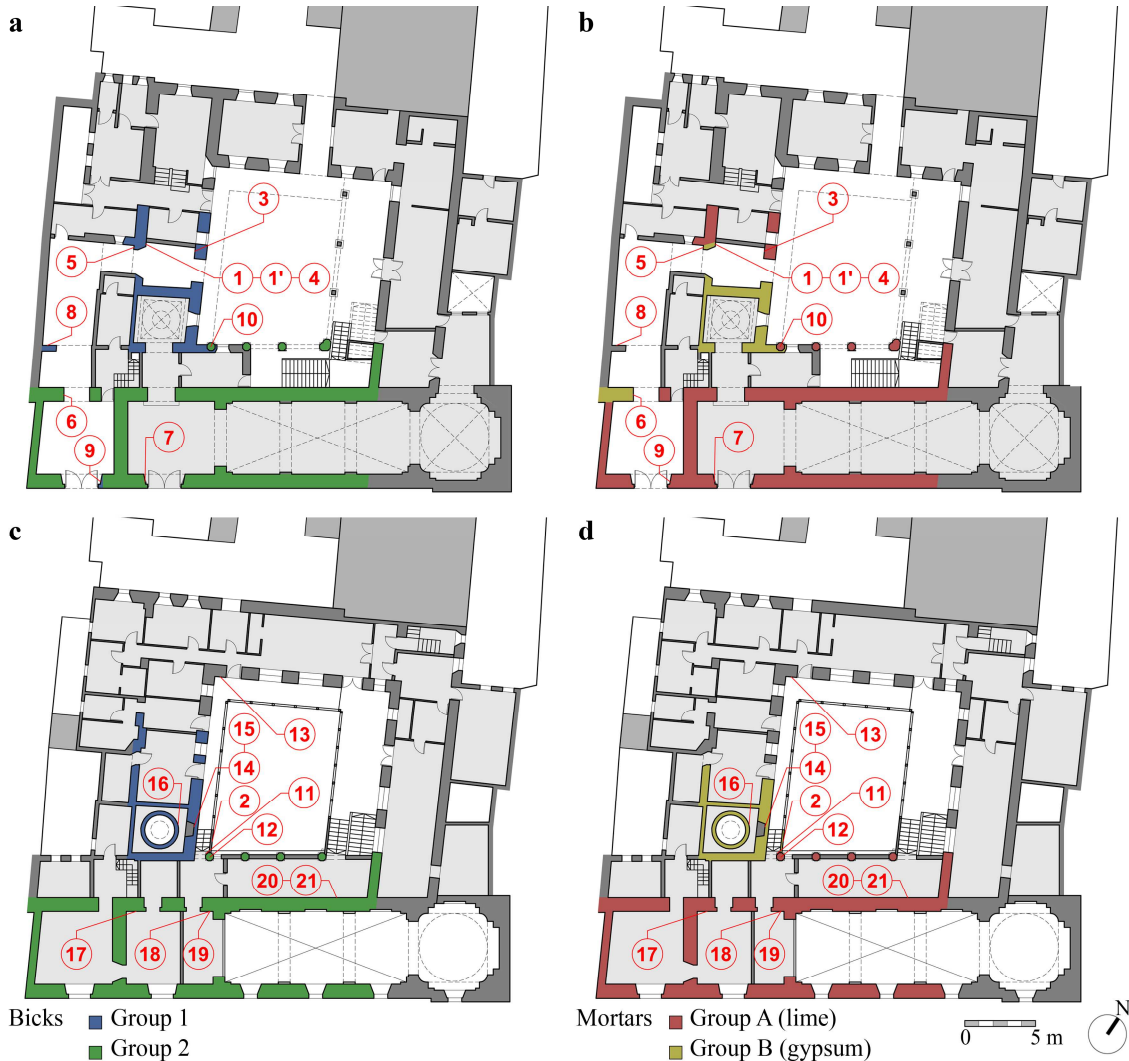


Figure 1. Ground floor plan (a, b), first floor plan (c, d) of the Antezana Hospital and samples location.

METHODOLOGY

The methodology combines four main steps: historical documentation, materials characterization, morphological analysis and architectural analysis.

Historical documentation involved the identification of the main historical dates, on the basis of historic archives, drawings and photographs. Afterwards, a materials characterization was done on several samples, taking advantage of the rehabilitation works carried out in the hospital during 2013. Samples of bricks and their associated mortars from different locations in the building, both on the ground floor and the first floor, were extracted. The samples were selected according to the apparently original or oldest parts, since one of the objectives is to determine the configuration of the original house. 23 samples were selected: 12 bricks samples (fig. 1a, 1c) and 11 mortar samples (fig. 1b, 1d). Besides, a sample of clay from the surrounding area of the city was analysed, in order to compare its results with those obtained from the bricks.

The following observation and analytical techniques were used for the fabric characterization: thin section polarized light microscopy, X-ray fluorescence spectrometry (XRF), X-ray diffraction (XRD) and thermogravimetric-differential thermal analysis (TG-DTA).

The third step was a morphological analysis of the different materials and constructive elements.

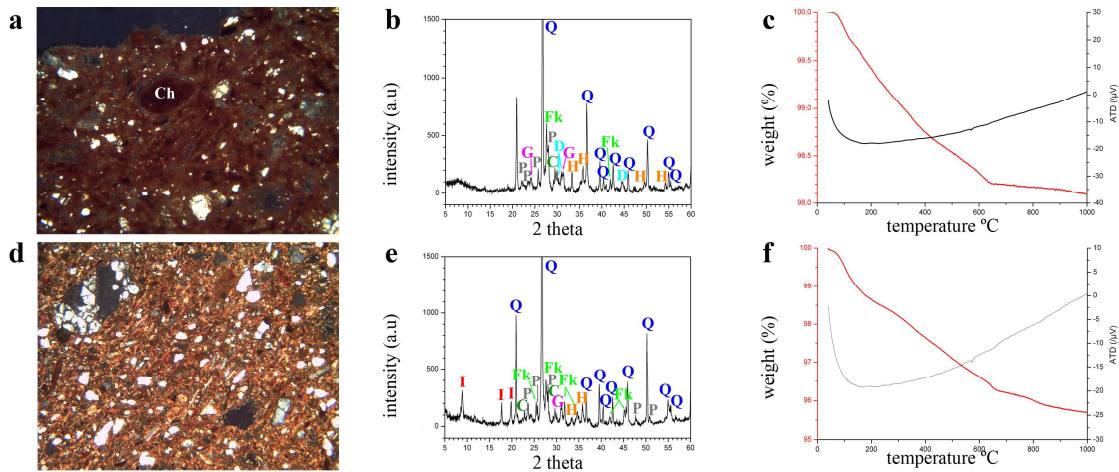


Figure 2. Thin section micrographs and diffractograms from bricks samples of the 2 groups. a) Sample 1. b) Sample 8. c) Sample 1. d) Sample 18. e) Sample 10. f) Sample 18. Inclusions and phases: C calcite, Ch chamotte, D diopside, Fk K-feldspar, G gehlenite, H hematite, I illite, P Na-feldspar, Q quartz.

Finally, an architectural analysis of the building was performed, allowing an interpretation of the building chronology, which related historical information with materials and construction techniques. The Antezana house, although it has been deeply transformed, is the only example of medieval noble house in Alcalá. So, to propose a hypothesis of the original design, other contemporary examples were analysed.

RESULTS AND DISCUSSION

Materials characterization

According to the XRF results, the most of the brick samples were made from calcium-magnesium clays having relatively high iron oxide content [3]. This feature is consistent with the results obtained from the clay of Alcalá de Henares, in which a high content of magnesium oxide (10.17 wt %) as well as iron oxide (8.54% wt %) were detected. It suggests that these bricks would have been manufactured locally using the clay available in the area.

Fabric characterization determined two groups of bricks. Group 1 consist in samples 1, 8, 9 and 16, while group 2 is formed by the following samples: 1', 3, 6, 7, 10, 12, 18 and 21[3]. Group 1 is characterized by the evidence of a higher firing temperature regarding group 2. The petrographic thin section shows calcareous clay with low birefringence and signs of vitrification (fig. 2a). Also, inclusions of grog or chamotte (crushed fragments of ceramic), which were deliberately added to the clay matrix to improve mechanical brick properties [4], were detected (fig. 2a). The average size of grog fragments is between 1 and 1.5 mm, although in some cases reach up to 4 mm in length. According to the XRD results, group 1 is characterized by the absence of reflections of clay minerals and the presence of neoformation phases by the effect of the firing temperature, as gehlenite and diopside (fig. 2b). Hematite reflections were also detected, while calcite reflections barely appeared (fig. 2b). Based on these results, a firing temperature of 850-900°C could be estimated. TG-DTA curves agreed with the firing temperature estimated by diffractograms (fig. 2c).

Group 2 show calcareous clay with a high degree of birefringence and no sign of vitrification (fig. 2d). Inclusions of grog were also detected, although they were fewer and smaller, hardly exceeding 1.5 mm. XRD data determined illite reflections and lower presence of hematite and gehlenite (fig. 2e). Diopside was not detected in group 2, whereas a greater presence of reflections of calcite was determined (fig. 2e). These data indicated a firing temperature slightly lower than group 1, which could be estimated between 800 and 850 ° C. TG-DTA curves agreed with the firing temperature estimated by diffractograms (fig. 2f).



Figure 3. Comparative analysis between the Antezana Hospital (a, c, e) and the Palace of Fuensalida in Toledo (b, d, f): two-storey courtyard with galleries of octagonal masonry column (a, b); woodwork ceiling of the upper main hall (c, e) and decoration based on heraldic shields (e, f).

The results determined two groups of mortars very homogeneous. Group A samples were lime mortars (samples 1, 3, 4, 10, 12, 18 and 21) and group B were gypsum mortars (samples 1', 6, 11 and 16). In group A, feldspathic sand was used as aggregate. In group B, the main phase detected was gypsum. Gypsum samples contained some impurities, as small reflection of quartz and feldspar.

In summary, group 2 correspond to the bricks used in the original house (15th century) and the interventions of the 16th century, while Group 1 correspond to the bricks used in the interventions of 1669, when the St. Ignatius's chapel was built (fig. 1a, 1c). Mortars group B are associated exclusively with the works of the chapel of St. Ignatius and specific interventions around it, as the opening of the hall to the access courtyard and the plaster of the pillar in front of the chapel. While mortars group A, are related to 15th and 16th centuries works (figure 1b, 1d).



Figure 4. First floor plan. Hypothesis of the building transformation: a) 15th century. b) 1483. c) 16th century. d) 17th century. e) 19th century. f) Current state.

Morphological analysis

The octagonal masonry columns (square floor plan and chamfered corners) without capitals from the original gallery are conserved, although the voids were brick up in the first modification of the house, when the hospital was established in the late 15th century (fig. 3a).

The church was built in the two large rooms of the front piece of the original house. The woodwork ceiling of the upper main hall conserved above the dome of the church also corresponded to this period (fig. 3c). According to the length of the south volume, the courtyard originally would have been larger and the masonry gallery would have had five bays, although only four columns remain.

The courtyard had not any volume on the west and the existing piece would have been built in the early 16th century. During the restoration carried out in the hospital in 1904, some inscriptions were found in Gothic characters that reported works in the hospital in 1520 [5]. It looks that those works in the west volume were done to close the courtyard on that side. Although the works continued until at least 1523, as it is evidenced by the papal bull of 23 January of that year, in which indulgences were granted for helping on the reconstruction and conservation of Hospital.

There is a column currently embedded in a wall of the side courtyard, decorated with the shields of arms of the founders, that was quite probably built in the early sixteenth century. The capital of the column is decorated with the shields of arms of the founders. In any case, the west volume would have been completed in 1526, since from that year St. Ignatius had his cell in this volume, while he was studying at the University of Alcalá.

The main façade has a large eave that corresponded to the length of the original volume of the main hall of the house. The eave was covering a large balcony which was demolished in 1800, when the church was built and the original voids were bricked up. After the hospital occupied the entire building and the courtyard was surrounded by rooms on all the four sides, the wooden

corridors were built. The east hallway is supported on wooden pillars which rest on stone bases, while the north and west are balconies without support.

In 1616, the first chapel of St. Ignatius was built on the south end of the courtyard's west volume. The chapel was located in the cell that had occupied the saint during his stay in the Hospital, in the first floor, and the room below. In 1667, the Society of Jesus decided to enlarge the chapel and in 1669, a contract was signed. The new chapel was expanded into the gallery of the original house and two rooms separated by an arch were constructed. The gallery was covered with a groin vault and the chapel with a pendentive dome and a roof lantern. The dome rendered useless the upper room and only the roof lantern became visible from the outside.

Architectural comparative analysis of precedent *Mudéjar* houses

The gallery with chamfered masonry columns (fig. 3a) and wooden elements, the eave and roof (fig. 3c) that still remain on the south volume, matches with the characteristics of a *Mudéjar* house of the fifteenth century. *Mudéjar* is a Spanish style influenced by Islamic architecture. In Alcalá de Henares, this is the only house of its kind preserved, although other contemporary examples can be found in Toledo. In the 15th century, Alcalá was a lordship of the Archdiocese of Toledo, a high point of the *Mudéjar* art. Some examples are the Palace of Fuensalida (fig. 3b, 3d, 3f) built in the early fifteenth century and the Palace of Don Gutierre de Cardenas in Ocaña built in the in second half of the fifteenth century [6].

Both buildings are organized around a central two-storey courtyard with galleries of octagonal masonry columns (fig. 3b), as those preserved in the hospital. Also the woodwork ceiling of the upper main hall of the hospital (fig. 3c) has the same construction elements of the ceiling as the main hall of the Palace of Fuensalida (fig. 3d). Another shared characteristic is the second hall of the hospital and its decorative elements based on heraldic shields of the owners (fig. 3e), which are closely related to those found in the Palace of Fuensalida (fig. 3f). Additionally, the façade eave of the hospital is very similar to the eave of another *Mudéjar* building of Toledo: the *Carcel de la Santa Hermandad*, [7].

Relationships with the original University of Alcalá

After Isabel de Guzmán died, there was a dispute between the brotherhood of the Hospital and the parish of St. Mary, where the Antezana couple had built a chapel for their burial. In 1504, Cardinal Cisneros, the Archbishop of Toledo and the founder of the University of Alcalá, ordered that the disputed properties had to be returned to the hospital. But eleven years after, the conflict remained unsolved, so the Cardinal acted as judge in the dispute. The Cardinal sentence of January 14, 1515, stated that the properties in dispute belonged to the hospital [8]. The document was signed by five members of the brotherhood on behalf of the hospital. One of them was Pedro Gumiel, the architect of the original building of the University of Alcalá. In 1517, the Antezana Hospital became a medical practice centre of the University with some of their teachers being part of the brotherhood.

Besides the relationships between the hospital and the University through the historical facts, a morphological relationship between the hospital building and the first building of the University can be established. It looks that the original house could have been used as a model for the first building of the University: the Saint Ildephonse's College. The Main College was organized originally around a two-storey courtyard with octagonal masonry columns on the ground floor and wooden pillars on the top. The main volume was higher and was located facing the street, as in the case of the Hospital. The analysis of the materials of the Hospital allow to relate the results with those obtained in previous studies of the bricks and mortar of the Saint Ildephonse's College [9]. The bricks of the Hospital Group 1 (17th century) correspond to the bricks used in the University in the early seventeenth century. The bricks of Group 2 (15th and 16th century) have very similar characteristics to those used in the original construction of the university in the early 16th century and those used until the seventeenth century. Mortars Group A are similar to those used in the University during the 16th and 17th centuries. In contrast, mortars group B are only present in the Hospital since no gypsum mortars were found in the University.

CONCLUSIONS

This study combines an architectural and an archaeometric analyses and allows to propose a hypothesis of the changes occurred in the Antezana Hospital during the last 500 years (fig. 4).

The results suggest that the original courtyard of the house was not built as it is nowadays and the original parts were only the north, south and the octagonal columns gallery (fig. 4a, 4b). The original construction was built with rammed earth boxes between brick piers and lime mortar. However, materials characterization cannot differentiate bricks and mortar of the 15th century from those of the 16th century. The mid-17th century materials were clearly identified and they were related to the construction of the St. Ignatius' chapel (fig. 4d).

The analysis of the Antezana Hospital allowed the connection between the Hospital and the original building of the University of Alcalá: the Saint Ildephonse's College. This relationship is established through historical figures such as Cardinal Cisneros, founder of the University and Pedro Gumiel, its architect. Also a morphological relationship between both buildings and possible influence of the Antezana house on the College design has been defined. Finally, materials analyses confirmed that the relationship between the two buildings is further than morphological, since agreements were found on the bricks and mortar used in them during the 15th and 16th centuries.

It was observed that materials characterization by itself was not able to identify bricks and mortars from different periods not very distant in time. So the integration of historical and architectural analysis with materials characterization was necessary to obtain reliable results.

Finally, the identification of the original appearance of the Hospital, besides a value in itself as it allowed to know and appreciate a unique example of urban nobility house of the 15th century in the city of Alcalá de Henares, helped also to understand how it was originally designed the St. Ildephonse's College, since its change due to the works undertaken in the 17th century.

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