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The Archaeological impact of the Lisbon earthquake (1755): the Archaeology of Built Space applied to the monastery of Santa María de Melón (Galicia, Spain)

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Abstract

This article summarizes the methodological process used, as well as the most outstanding results of the Architecture Archaeology study carried out in Santa María de Melón monastery (Galicia, Spain). Our project combined the stratigraphic analysis of parameters, the medieval Archaeology, the systematic casting of medieval and modern documentation as well as a typological and iconographical analysis much more common in Art History. This work has made it possible to identify the different stages of a building, as well as to reveal the existence of a number of structural improvements carried out during the Modern age as a result of the 1755 Lisbon earthquake, also known as the Great Lisbon. In this respect, our work represents one of the first approaches carried out in Archaeology regarding the impact of this natural disaster on our Country.

Introduction

In August 2002 the General Directorate of Tourism of Galicia's autonomous government, the Xunta, chose three independent working groups to carry out initial studies prior to designing the intervention project for the rehabilitation and conversion of the ancient Cistercian monastery of Santa María de Melón (Melón, Ourense) into a hotel and spa. Three specific types of study were requested: an archaeological company was hired to carry out a series of soundings in various parts of the monastery. A team from the University of Santiago de Compostela, directed by Begoña Fernández Rodríguez, was hired to carry out a historical and artistic study of the building, involving the analysis of historical sources that refer to the monastery. Finally, a team from the Archaeology Laboratory of the 'Padre Sarmiento' Institute of Galician Studies directed by Rebeca Blanco Rotea was commissioned to carry out a stratigraphic analysis of the building by applying the Archaeology of Architecture.

The work of the last two teams started in August 2002 and came to an end on 31 January 2003. Although these studies were independently commissioned for each team, the need to work jointly on them meant that there was constant communication between all three. However, there was a much higher level of collaboration between the teams responsible for the historical and artistic investigation and the stratigraphic reading. In fact, the discovery of the impact caused upon the building by the Lisbon earthquake was a result of this collaboration.

Figure 1. Geographical location of the monastery of Santa María de Melón (Ourense, Galicia).

In the study entitled A Historical and Artistic analysis of the Monastery of Santa María de Melón, it was requested that investigations be carried out into the real situation of the monastery and the role it played at the heart of the Galician Cistercian monasteries, which implied consulting numerous documentary and bibliographic sources. This investigation was completed with an analysis of the building in terms of Art History, studying the different conserved parts of the building from both a stylistic and formal point of view. Simultaneously, in a study entitled Stratigraphic Analysis and graphic documentation in the Monastery of Santa María de Melón a stratigraphic reading was requested of some parts of the building that would help uncover their chronology and func-
tion. After an initial visit to the monastery, it was decided that a more general study be carried out covering the building as a whole, as although it was observed that the building had been made in different periods, it all belonged to a single unified complex forming a single entity, which had to be considered as such.

Description

Situation
The Monastery of Santa María de Melón is situated in the north-western Iberian peninsula to the south of Galicia, on the border between the provinces of Ourense and Pontevedra, between the hills of Faro and Carvelo, the Cortela and Bouzas rivers, and close to the mouth of the river Cerves. The building, as is typical in Cistercian monasteries, was built at the bottom of a deserted, lonely valley, suitable for spiritual contemplation, with some type of watercourse. The monastery at Melón overlooks a panorama of distant mountain ranges and pine woods (Torres Balbás 1954:19), perfectly in line with the type of location expected by the Order.

In 1134, one of the Order’s guidelines stipulated that their houses should be set apart, in "lonely places that are not frequented by man" meaning that they generally chose valley floors with difficult access, allowing the community that settled there to concentrate on their monastic life. Closeness to watercourses was also sought (Torres Balbás 1954: 18), to guarantee the perfect development of community life within the monastery.

Description of the monastery and its internal organization
The remaining structures of the monastery are a church, part of the cloister and two wings of the Hospice Cloister (figures 2 and 3), as well as other common areas in both cloisters, and structures on nearby plots of land (dovecote, granaries, terraces for growing crops, etc.) The whole monastery complex is surrounded by a wall of large granite blocks combined with smaller stones, with a house to the west of the monastery today in private hands, but which was once monastery property.

The Church
The church of the Monastery of Santa Maria de Melón is laid out in the shape of a Latin cross whose naves (long since vanished) would have been divided into three main naves in seven sections (the organisation of which may still be seen today on the inner section of the southern wall, conserving the lateral southern nave), and whose central nave, following the traditional style, was twice the width of the side naves. There is a wide transept, divided into three main sections (arms to the north and south and transept), in which it is possible to observe evidence of restructuring work that took place in the monastery according to new stylistic movements, following its incorporation in the 'Congregation of Castille'. However, it still conserves remnants of its Mediaeval layout, with the northern wing including enclosures with primitive crossed vaults, whereas the eastern walls have two chapels displaying a clear influence from the Burgundy region.

Figure 2. Standard layout of a mediaeval cistercian monastery.

Although something uncommon in Cistercian churches, as the majority chose to remodel their temples after joining the ‘Congregation of Castille’, the church at Santa María de Melón has a typically Medieval top section, organised around an ambulatory leading to three radial chapels, meaning that it has a close relation with other examples found today in the region of Galicia.

Apart from the chapels mentioned above, in the northern arm of the transept, communicated with it via an access door (referred to in Mediaeval times as the Door of the Dead), is a chapel with a single nave divided into two sections, finished off with a semicircular apse preceded by a straight section which forms the presbytery of the chapel and which was used for funerary purposes.

The church has undergone serious alterations around its naves, and lost a significant part of its surface area after being struck by lightning and affected by a storm at the end of the 19th century, which lead to the reconstruction of the western gable end of the temple in modern times.²

Parts of the monastery
The Cistercian Order appeared at the end of the XI century, when a group of Benedictine monks, affected by the chaotic situation of the regular clergy and a distancing from the original tenets of the Benedictine order, decided to return to the lifestyle propounded by St. Benedict; their basic statement of rules for the Cistercian order are the Regula Benedictini. This conceives monasteries as spaces that should remain completely independent from the rest of the world, and be organised as closed spaces in which the monk has contact with the rest of the community but remains cut off from the outside world. To do so, the monasteries were built around a common space (the cloister), around which a number of rooms were built in which the monks carried out their shared and private activities.

² See Cameselle Bastos 1990.
Figure 3. Upper and lower of the monastery of Santa María de Melón.
It is possible that this organisation around a single cloister continued in Melón until 1506, when the monastery was incorporated into the Congregation of Castille, and as a result of this underwent a series of reforms that eliminated the old Mediaeval structures replacing them with structures that were more in line with the trends of the time, growing in size and opening up to the exterior with a new cloister (The Hospice Cloister), around which other new constructions arose. However, it is not possible to confirm this until excavations are made around the building that make it possible to define the layout and structures that were present in the building at that time.

Cloister, only retained its walkway to the south and west, opening up into a series of rooms which were not interconnected. The second cloister is the Hospice Cloister, which is in considerably better condition than the other, and conserves its four wings and has rooms in a much better condition than the previous area. It would appear that both cloisters and their rooms were organised over two floors, and with the exception of the other structures which today are in the garden (the dovecote, silos or terraces which divided the garden into different areas for cultivation), there was no indication or evidence of any other type of construction within the monastery that was suitable for investigation.

Also, in the interior of the monastery and defined by the wall, before entering into the monastery itself, there was a large atrium divided into three clearly separated spaces. The first was in front of the monastic rooms, featuring a symmetrical axis that lead directly from the Door of Santa María to the entrance to the vestibule of the Hospice Cloister. This space is flanked by another two: on its left, and separated by a small stone balustrade, is a rectangular atrium (occupying the space previously occupied by the naves of the temple), leading to the church and cemetery. To the right is another rectangular space, which runs longitudinally and is separated by an archway of the main atrium and leads to the ‘service area’ of the monastery, access to which was via its own entrance in the monastery’s wall.

Initial proposals and analytical methodology

Initial proposals

When investigation work started at the monastery, the first explorations involved a series of visits, as well as examination of published bibliographic works and reports kept at the General Directorate of Cultural Heritage from the Department of Culture, Communication and Tourism of the Xunta, Galicia’s autonomous government, on possible intervention work that had taken place at the monastery. This made it possible to establish a series of initial hypotheses, which, as well be seen in some cases, were proved incorrect once work started. The initial proposals, based on these visits and explorations of written documents, were as follows:

The monastery was ruined, abandoned and covered in vegetation.
The building belonged to the Cistercian Order.
Its origins were in Mediaeval times, around 1195.
The monastery underwent transformations in modern times, as a result of being incorporated into the ‘Congregation of Castille’ in 1506.
The building was abandoned around 1835, at the time when church lands were sold off.
After this date the building underwent a series of changes: it was split up between different owners; and in 1885 lighting and a storm knocked down the church’s naves and left it in its currently ruinous state.
Analytical methodology

1. Bibliographic study of different works selected according to content.

2. Study of documentary sources referring to the ancient Cistercian monastery. This study was carried out in different public bodies and historical archives at local, regional and national level.

3. Simultaneously, in order to contrast the different hypotheses that were suggested, specialists examined the different aspects of the building, making it possible to affirm the time periods involved, and allowing work to advance despite the condition of the building itself.

4. To establish connections with other monasteries, both Benedictine and Cistercian, from the same period. An exploration was made to determine periods, analyse structures and distributions, carrying out visits to other Cistercian monasteries to examine the types of structures used, construction methods and use of space. Despite the fact that many of them have undergone restoration work, they are still basic references for the study of the structures, forms and stylistic resources used in Cistercian architecture throughout the modern period.

5. The study, periodization and formal analysis of the Mediaeval stage of the Monastery of Melón, which is mainly seen in its temple. Creation of plans with chronological information. This study, despite being marginal to the project, has made it possible to establish a whole series of links and relationships between parts of the monastery that were considered to be Mediaeval and which have served as a criteria to confirm or reject these hypotheses.

6. The study and analysis of the monastery, analysing the different formal elements and grouping them according to type, not only establishing and seeking contacts with other elements in Melón, but also in other monasteries, at the same time as exploring the stylistic and constructional methods that were developed there, grouping them firstly according to styles, and then by chronological development.

7. Establishing the first hypotheses, in contrast to the data from the stratigraphic analysis and with the results obtained from archaeological soundings, which have made it possible to evaluate the information obtained, to progress with and ratify hypotheses, without which we would have continued with merely hypothetical foundations.

8. Photographs have also been taken of the different structures and spaces present at the monastery, although here, and thanks to the policy of co-operation established between the different teams, the graphic material produced by the team responsible for the Stratigraphic Study has been used, in order to make comparisons and bring together criteria that make it possible to unite or differentiate positions in the case of different points of view existing over one single reading, an objective which in most cases was highly successful, and which has been of great benefit to the Monastery of Melón and its restoration project.

Methodology used in the stratigraphic analysis

1. Study of bibliography and consultation of other documentary resources. This work started in July 2002, whilst awaiting the signing of the agreement, although this was abandoned as work progressed, as it was one of the tasks that had been carried out by the previous team.
2. Graphic documentation

Compilation of old photographs from inhabitants of the Local Council of Melón.

Taking digital photographs of the entire monastery before clean-up work started.

Correction of the survey provided by official bodies on starting work.

Drawing illustrations of all of the constructions still conserved within the monastery.

Taking digital photos of the entire monastery after cleaning and repointing.

Taking topographic points in the east and west wings conserved in the Hospice Cloister, of the southern and western wings conserved in the Processional Cloister and in the circular tower joined on to the southern façade of the monastery. The purpose is to rectify the photos taken in these three areas, in order to carry out an architectural survey of all of them.

Taking photogrammetric pictures in order to produce a survey of the four façades of the atrium leading into the monastery.

3. Analysis of the construction methods used.

Stratigraphic analysis of the building, by differentiating units using the manual illustrations of all of the conserved construction elements, and creating analytical reports.

Differentiating different types of construction materials, constructive and decorative methods. Creating descriptive reports.

After differentiating and describing each of these units and elements, groups were then formed of all coinciding elements, taking into account the interfaces that existed between them. Summary processes were also started, attempting to interrelate some units with others, and other singular elements with others.

Process of summarising, correlation and periodization.

4. Documentary analysis: in the final stages of analysis, work started to compare the data taken from the stratigraphic reading with that from the documentary investigation, as well as that provided by the team responsible for the historical and artistic analysis.

Apart from the work described above, all of which had a direct relation with the project that was initially presented, other work was carried out that was required as the process developed. These were: controlling work on repointing and cleaning, to avoid it from affecting the construction itself; writing reports throughout the period of field work, in order to provide information to the relevant authorities about events that took place on the site (such as the western wing of the Hospice Cloister falling down) or to provide information that could be included in the project whilst being created.
to stratigraphic investigations and historical/artistic studies), had suffered serious damage to its structures which forced it to reposition its different spaces and planned construction work.

**Preliminary results obtained from investigations**

The evidence described above largely contradicted the initial starting hypotheses, supported by bibliographic and documentary sources studied in the initial phase. These would appear to indicate that the monastery was abandoned and fell into disrepair for two reasons: the process of abandonment came about as a result of the sale of church lands that affected the monastery in 1836, and as a result of the destruction of the naves by a bolt of lightning and a storm in 1885 (Cameselle Bastos 1990).

However, as surveying and analysis work continued at the monastery, the data indicated that construction work had been paralysed around the middle of the eighteenth century. Around this time a series of structures had appeared that indicated building work had increased in the monastery, motivated by functional changes, in particular a desire to beautify the building, particularly its exterior, characteristic of the Galician Baroque style. These changes were:

- Modifications made to the main façade of the monastery (N) and the opening of five balconies in the façade.
- The construction of a series of arches that separates the service area from the area that leads directly into the monastery from the atrium, and modification of the open space to the west of the monastery, by construction of a terrace in the western section of the garden to provide more space. This meant it was necessary to build a containing wall for the terrace and modify the structure and vaulted roof of the room that leads to the ‘service area’.
- The construction of a bevelled structure to embellish the southwestern corner of the outer façade of the rooms in the Hospice Cloister. The bevelled form of this structure makes it possible for carts to turn around in the area, and also hides the sewer that runs under the monastery, guaranteeing its safe use.
- The construction of a sun gallery, today greatly altered, in the southern façade of the rooms in the southern wing of the Processional Cloister.
- Construction of large staircase in the room to the southern end of the transept of the church. This room communicates the space with the Processional Cloister and with a new space now situated on the eastern side of the monastery.
- Modifications to the room initially identified as the *Locutorio*.
- In the eastern façade of the room that contains the large staircase are the bases of the two walls that run the whole height of the façade, as well as the outline of an arch that would have possibly lead to a large dome between these two walls. On the other
Figure 8. Cracks produced in the monastery of Santa María de Melón due to horizontal movement of stone blocks.

...side there are also the bases for a smaller wall, connected to the southern post of the eastern door to the possible Locutorio, which contained the groove for another arch that joined the base of the wall to the south.

This evidence lead to the suggestion of carrying out archaeological soundings in the area, as all of the indications pointed to the existence of rooms in this area of large dimensions which were unknown until that moment. In effect, the soundings revealed the existence of a room which opened out to the east of the Statio, of which the southwestern corner was excavated, formed by a series of walls with very high quality stonework, perfectly seated and raised over a stone base of equally high quality. Judging by the dimensions of the room, the remains of a possible vault and the quality of the workmanship, it was considered that the room would have served some purpose within the monastery. Due to the nearness of the temple, the absence of a sacristy, and the change in function of the room where the chamber was found, now converted into a Statio, it was suggested that it was itself used as the Sacristy.

Another sounding was made in the area where the base of a lower wall had been detected. Here another wall was found with very high quality facing and of considerable size, over 20m long, and perfectly finished at its eastern end, although without appearing to enclose any type of space. Finally, the sounding also discovered that there had been a considerable collapse of material. This data indicates two events. Firstly, it would appear that the first of these rooms was used as the Sacristy, which had not been found until this moment. This fact could finally be affirmed with total security, when in the latter stages of the inspection of documentary resources, a plan was found dating from the end of the nineteenth century in the Cathedral Archive in Tui (Pontevedra), with the area defined as “sacristy (occupying two areas)”. It would also appear that the wall following on from it never actually took place, but indicates that there were important reforms to the eastern section of the monastery. In light of this, it was decided to close off the door to the possible Locutorio, which was the situation found when work started.

The condition of this wall, as well as the ‘reinforcing’ structures that had been documented and previously indicated (a buttress connected to the NE corner of the Processional Cloister that prevented circulation through its ambulatory; a buttress-like structure connected to the southern end of the room identified as the Sala Capitular; or pillars documented in the interior of the Refectorio supporting the cannon vault), lead to a rethinking of the initial hypotheses, as work of this kind, the consequence of an important destruction, was not in line with the ‘repairs’ that had been documented and dated after the time of the selling off of church land or the destruction caused by the lightning bolt.

3 Carried out by the archaeological company Prospectiva y Análisis and directed by the archaeologist Andrés Bonilla Rodríguez.
One piece of data that had not appeared until that moment was the key to understanding the events that had been recorded until then. As mentioned previously, in the process of inspecting documentary evidence about the monastery it was found that there had been considerable damage after the selling off of church lands, as a result of the destruction of the naves by a lightning bolt and storm damage (Cameselle Bastos 1990). It also appears that the Processional Cloister was destroyed at this time, as if it were the result of a domino effect after the naves collapsed. However, there were a number of factors that did not appear to be in line with this hypothesis.

The whole enclosing wall of the southern nave was conserved along its whole length, although not in its height. This wall was the inner section in Mediaeval times, when the temple was built, although the outer layer was extremely affected, and the conserved area corresponding to the first and second stage, approximately, of the naves of the church, had an exterior layer from the modern period. Also, where the buttress was situated, the southern enclosing wall was conserved at full height both on the interior and exterior, and was the only area that had not been affected by the lightning bolt, conserving the first section of the naves. The question was: if the lightning and the storm had brought about the downfall of the naves and part of the Processional Cloister, how could we keep upright the wall that supported the vaults of both the southern nave of the church and the northern wing of the Processional Cloister, which were also in a very fragile condition as their outer layer had been removed to build another wall in modern times when the Cloister was built? But furthermore, if the angled buttress indicated did not previously exist, how had the first section of the naves been conserved, together with all of the southern enclosing wall, only in that area?

All of these factors would appear to indicate that the naves and cloister did not collapse at the same time. The first was obviously the result of the lightning bolt and the storm on the structure of the monastery, although the second must have been beforehand, as the presence of the buttress would have contributed to the first section of the naves remaining upright as well as the southern wall in the area, also making it possible to document the modifications made to the outer layer of the external northern wall that closed the cloister in modern times. Other questions then appeared, such as why was the inner layer of this Mediaeval wall conserved and not the outer layer, that was repaired with solid blocks of stone and was joined to a low containing wall? It is thought that this repair work was the result of an emergency that occurred before the naves collapsed, that made it possible to maintain the inner layer of the wall but not all of its height. More and more questions arose, until it was concluded, based on the number of buttress-like structures which appeared to date from the mid-eighteenth century, that emergency repair work on cracks in the building had been carried out as a result of horizontal movement within the building, and the possibility that the monastery had been affected in the mid-eighteenth century by an earthquake of considerable importance.

In effect, on the morning of 1 November 1755 there was a considerable seismic movement, today known as the Lisbon Earthquake. Some studies carried out recently have detailed the effects of the earthquake in Spain (Martinez So-
laires 2001), but although they indicate that some buildings were affected in the province of Ourense, none refer to the Monastery of Melón. Once again, in the final stages of documentary research, it was confirmed that a document had appeared, a reply by the legal authorities in Melón to a query from the King, Fernando VI, to ascertain the damage that the earthquake had caused in the country.

This was an inflection point for the monastery in Ourense, marking the beginning of the end, at the same time as it obliged some of its traditional spaces to be transformed in order to guarantee maintaining certain sources of income, or a whole series of emergency construction projects to consolidate the building undertaken by Cistercian monks to prevent the total collapse of the building, something that was impossible due to the political and social circumstances of the nineteenth century that affected the monastery. This undoubtedly explains why, despite being very much at the forefront of the intentions of the monks, this never actually fully took place.

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