

## Restoration of the Pedralbes Stained-Glass Windows

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### Abstract

The online publication of the reports on the restoration of the Pedralbes stained-glass windows marks the culmination of a long, arduous process. Over the course of more than 12 years, a multidisciplinary team of conservators-restorers, architects, glassmakers, metalworkers, stonemasons, art historians, physicists, geologists and biologists has worked to understand and deal with a diverse range of aspects related to the conservation and restoration of the 32 stained-glass windows worked on. This article offers a glimpse of the historical and artistic aspects of the stained-glass windows and the restoration's guiding criteria and methodology. The details and description of the work carried out by the team of professionals are provided in each of the reports. The 11th Forum for the Conservation and Technology of Historic Stained Glass, held in Barcelona, is an excellent opportunity to highlight this work among specialists in the sector.

### Presentation

The Reial Monestir de Santa Maria de Pedralbes monastery was built in the 14th century by the monarchs of the Catalan-Aragonese Crown, Elisenda de Montcada and James II the Just. The monastery was opened in the spring of 1327 and just a few months later, after the king's death, Queen Elisenda joined the community of Poor Clares. For 37 years, she lived in the mansion she had built next to the monastery, to which she left most of her possessions to ensure their survival. At the queen's request, the monastery was granted the protection of the Consell de Cent, a consultative body belonging to the municipal government of the city of Barcelona, abolished in 1714 by the Nueva Planta Decree. This protective role played by the Consell de Cent continues today with Barcelona City Council, thanks to a contract signed in 1972, under which, among other things, it is obliged to conserve and restore the monastery. Through the Directorate of Architecture and a master plan drawn up for this purpose, yearly programmed projects and undertakings are planned, directed and carried out.

### The stained-glass window restoration plan

In 1995, as part of the programme referred to above, work began on the restoration of the windows and rose windows in the church and the chapter house. To this end, a company of glassmakers was hired to restore the stained-glass windows and refurbish their protective coverings, which were visibly damaged from the outside of the building.

In 1998, continuing with this programme, plans were drawn up to restore one of the medieval stained-glass windows in the apse of the church, which had very different characteristics from those that had been worked on previously, which led to a change in the team make-up.

At that time, and in response to the new needs, the Directorate of Architecture requested the collaboration of the restoration specialists from the Archaeology Service (also part of Barcelona City Council), as it considered them to be familiar with this type of work given their prior experience and knowledge. The involvement of restoration specialists from the Archaeology Service, as well as other external collaborators, also meant a change of direction with respect to the work that had been started. Thus, the initial team of glassmakers was joined by professionals from other disciplines and fields, with the aim of covering aspects such as historical documentation and the identification of materials, which were necessary at one point or another in the process. Once the team was set up and the methodology established, a total of 32 of the 39 stained-glass windows conserved in the monastery (between the chapter house and the church) were restored between 1998 and 2010. At the time of writing – spring 2022 – the conservation-restoration work is under way on the two pieces still to be restored: the rose window on the church's north façade and the two windows on the east façade, overlooking the choir.

### The monastery's stained-glass windows: artistic and historical aspects

The restoration has brought with it the possibility of studying the monastery's stained-glass windows, not only on the basis of their artistic characteristics but also, going a little further, through surviving written documentation, whether in the monastery's own archives or in others. In this regard, it is worth mentioning the work carried out by Anna Castellano (2011) in relation to the monastery's archives, through which she brought to our attention the presence of names of such renowned medieval glassmakers as

members of the Fontanet family and Terri de Metz, although we have not been able to discover who actually made the medieval stained-glass windows, which remains to this day an unknown quantity.

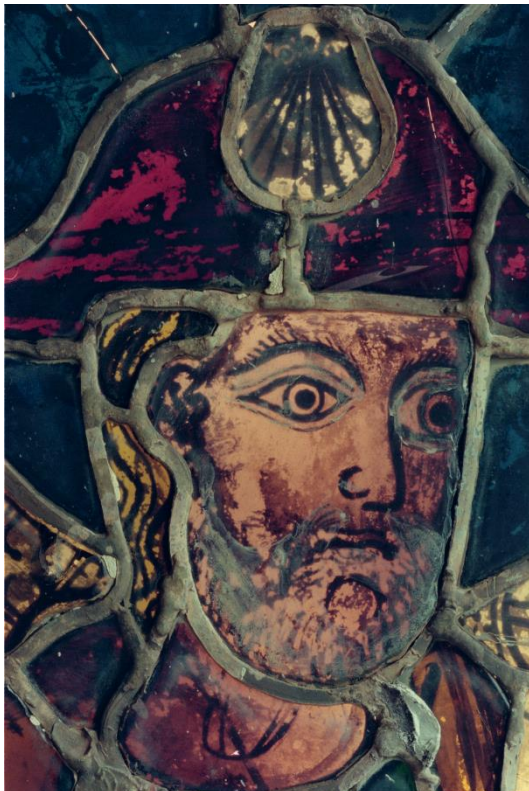
Meanwhile, the work of *Sílvia Cañellas* (2011) focused on studying the Pedralbes stained-glass windows as a whole, identifying timelines and establishing a ‘small catalogue’ that can be divided into three distinct periods, corresponding to the 14th, 17-18th, and 19th centuries. Each stained-glass window shares the same decorative arrangement across these three periods, with figures of saints in architectural niches in the lower parts of each lancet and panels with geometric decorations right up to the tracery. Cañellas also takes a special look at the pair of stained-glass windows located on the northeast side, which, despite differing from the rest in terms of their decoration (they are geometric, bichrome stained-glass windows), serve to explain a very characteristic moment in this art form.

Another study on the matter is by *Flavia Bazocchi* (2011), who explores the influences and patterns of the Pedralbes medieval stained-glass windows. Thanks to her rigorous documentary research, the author has opened the door to the possibility of finding unpublished archives containing information about our stained-glass windows.

### The materials: glass, lead and putty. Some interesting facts

Most analysed medieval glass is sodic in nature, which gives it greater stability in terms of preservation. Red-coloured flashed glass, which has a potassic composition and is more sensitive to alteration, is a notable exception (*Domingo Gimeno*, 2001, 2011). This is essential for understanding why these stained-glass windows are in such good condition, as opposed to other severely weathered medieval stained-glass windows composed of potassium.

The manufacture of flat glass from cylinders was only used in the production of certain types of glass, specifically honey-coloured glass. The most commonly used form is from discs, which would have been about 40 cm in diameter.



*Fig. 1. Stained-glass window OII. Detail of the figure of Saint James, with grisaille painting and mostly original leadwork (backside). Photo: Josep Gri.*

Exceptionally, the medieval stained-glass windows retain approximately 70% of the original leadwork. The medieval lead was fully preserved during the restoration process, as it was still malleable despite some cracking. This was not the case with the putty; most of it had to be replaced as it was extremely hardened or missing and thus made it impossible for the panels to regain their flat shape. Once analysed, the putty was recovered by manufacturing it as it was in the past, with calcium carbonate and linseed oil (Fig 1).

### The supporting structure

The appearance and technique used to make the supporting structures might suggest that the iron fittings were the original ones (*Lluïsa Amenós*, 2011), but a more in-depth analysis has raised doubts about their dating. Due to the poor state of the anchorages and alterations in the stone of the windows, it was necessary to replace these elements.

### The restoration work: criteria and methodology

The Reial Monestir de Santa Maria de Pedralbes monastery has been declared a Historic-Artistic Monument of National Interest<sup>1</sup>. The criteria governing any conservation-restoration work on a monument of this kind are set out in Article 35,

<sup>1</sup> (D. 3-6-1931; Gaceta 4-6-1931), included in the Historic-Artistic Heritage Catalogue of the City of Barcelona (files 492 and 493; category A, chap. i), in the Special Plan for the Protection of Architectural Heritage and in the Catalogue of District 4 (element no. 49).

‘Criteria for intervention’, of the Catalan Cultural Heritage Law<sup>2</sup>. The restoration was carried out following the criteria of minimum intervention and maximum respect for the original work, considering some changes with a view to improving the conditions of the building and its surroundings for future conservation.

All the original features and parts were preserved, as long as they were not detrimental to the original work. Reworked items were also preserved as they were considered to be witnesses to the passage of time and to the history of the work itself. If any additions were removed, they were thoroughly documented and appropriately stored.

The materials and products used were chosen on the basis of their reversibility and compatibility with the original work. They are either tested products – in the case of newly created materials such as the adhesive used in the glass joints – or traditional ones, such as the putty, whose compatibility is guaranteed. The materials, products and restoration processes were carefully considered in advance based on criteria of respect for the environment and people, discarding those whose disposal and use could be harmful.

The work followed a scientific methodology defined, broadly speaking, by prior knowledge of the pieces gained through historical and artistic study, the morphological and technological study of the stained glass, and the analysis and study of the types of alteration and their causes. This prior knowledge and the established criteria determined the steps to follow in the restoration process. The documentation of the whole process not only forms an essential part of the compilation of the projects carried out, in a descriptive sense, but also becomes a record for future restorations.

Given the good state of conservation of the Pedralbes stained-glass windows, there was very little doubt as to the possibility of keeping them in their original location, a fact that we wish to highlight, as these projects have a specific goal that has not changed over the years. Their conservation as works of art is not only for contemplative purposes, but is also closely linked to their function and to the understanding of the building in which they are located.

Although the restoration has shown complete respect for the original work, we cannot overlook some significant changes that we believe are entirely for the better. These include some notable changes to their appearance from the outside and their long-term maintenance. The framing of each panel and its placement on site as an individualised feature make it easier to carry out maintenance work without affecting the whole of the window. Compared to its initial position, the stained-glass windows are set back by 5 cm and placed on iron crosspieces using tongues fixed with metal pins to keep them in place. This 5 cm gap between the stained glass and the protective glass creates an air chamber that prevents condensation. The sides of the stained glass are fitted with lead wings to prevent natural light from entering. Openings at the top and bottom of the window create a draught through the chimney effect. When viewed from the outside, it is possible to contemplate the stonework of the tracery, until now hidden by the protective coverings.

### **Restoration work**

In order to provide a precise description of the restoration work carried out, we will limit ourselves to explaining the structure of the restoration reports, which can be viewed on the Barcelona Archaeology Service website at <https://ajuntament.barcelona.cat/arqueologia/barcelona/publicaciones-comunicación/vitralles-de-pedralbes/>

There is one report for each stained-glass window. Their structure follows that of the work process. Firstly, an analysis was carried out, and the work to be done on the window was determined based on an initial study of the piece and data collected on its state of preservation, together with the established restoration criteria. In some cases, an in-depth study of the alterations observed and their causes was conducted in order to complete the restoration guidelines. The information gathered is displayed graphically, in the form of work maps drawn up with coloured legends that make it easier to see the general scope of each alteration observed in the stained-glass window. The graphic information is accompanied by a description of each alteration, together with an assessment of the effect on the stained-glass window, either as a whole or on a particular feature (figs. 2-3).

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<sup>2</sup> It is also included in the Athens Charter of 1933, the Venice Charter of 1931 and the Charter of Restoration of 1971.



Fig. 2. Application of zeolite dressing with AB57 to remove the lime coating. Photo: Josep Gri.

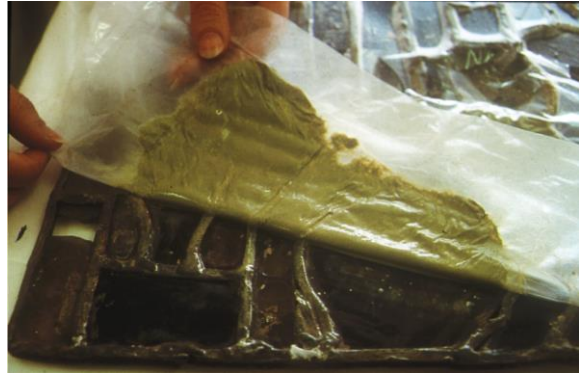


Fig. 3. Removal of the dressing by lifting the Japan paper. Photo: Josep Gri.

Due to various issues, which could be summarised as deriving from technological and computer changes, the reports on the restoration of the stained-glass windows could not be published until relatively recently. Out of a planned total of 32 reports, 11 are currently available, mostly on 19th century stained-glass windows.

It is also worth mentioning that the general guidelines of the project are to be included in an introductory report entitled *Studies and preliminary work*, which will compile all the information prepared to draw up the 1998-2010 Stained-Glass Window Restoration Plan. Meanwhile, to bring the plan to a close, work is being done to prepare a final volume of conclusions and ending remarks.

### By way of conclusion

The restoration has been a great opportunity to get to know these stained-glass windows from top to bottom. The great research and documentation work carried out by the Institut d'Estudis Catalans (AINAUD et al 1997), the only documentation we had when we began the Restoration Plan in 1995, must be complemented today with the above-cited works. It is not only technology that has brought innovations; taking the pieces down, observing them closely and working for months often provides a wonderful time for reflection, communication and discussion among the professionals involved, without which it is very difficult to produce reliable results and conclusions. Restoration has brought to light post-Spanish Civil War reworkings and also evidence of medieval tracery combined with 19th century lancets. Thus, the presence of medieval glass in virtually all the stained-glass windows in the church makes the whole a unique work due to its unity in the conception and execution of the original decorative programme.

### Bibliography

- Lluïsa AMENÓS, "Ferramentes i proteccions dels vitralls d'època medieval (segles xiv-xv)" *MUHBA Documents 4, Els vitralls del monestir de Pedralbes i la seva restauració*, Institute of Culture-Barcelona City Council, Barcelona, 2011, pp. 48–56.
- Joan AINAUD DE LASARTE et al., *Els vitralls de la Catedral de Barcelona i del Monestir de Pedralbes*. Institut d'Estudis Catalans, Barcelona, 1997.
- Flavia BAZZOCCHI, "Las vidrieras góticas: estado de la cuestión y fuentes documentales", *MUHBA Documents 4, Els vitralls del monestir de Pedralbes i la seva restauració*, Institute of Culture-Barcelona City Council, Barcelona, 2011, pp. 24-37.
- Sílvia CAÑELLAS, 'Les vidrieres postmedievales', in *MUHBA Documents 4, Els vitralls del monestir de Pedralbes i la seva restauració*, Institute of Culture-Barcelona City Council, Barcelona, 2011, pp. 43-46.
- Anna CASTELLANO TRESSERRA, "Notícies documentals entorn dels vitralls", *MUHBA Documents 4, Els vitralls del monestir de Pedralbes i la seva restauració*, Institute of Culture-Barcelona City Council, Barcelona, 2011, pp. 10-21.
- Domingo GIMENO, 'El vidre de Pedralbes: aspectes tecnològics i formes d'alteració', *MUHBA Documents 4, Els vitralls del monestir de Pedralbes i la seva restauració*, Institute of Culture-Barcelona City Council, Barcelona, 2011, pp. 84-92.
- JOSEP MARIA JULIÀ I CAPDEVILA, MONTSERRAT PUGÈS I DORCA, ALÍCIA CALMELL I IBÁÑEZ, DOMINGO GIMENO I TORRENTE, PERE BESERAN I RAMON, & FERNANDO CORTÉS PIZANO, "La restauració del vitrall de sant Pere i sant Jaume de l'església del Reial Monestir de Pedralbes", *Actes de les I Jornades Hispàniques d'Història del Vidre*. Archaeology Museum of Catalonia – Barcelona, Dossiers of the Archaeology Museum of Catalonia – Barcelona, 1, 2001, pp. 359-372.

