

Restoration of the stained glass windows of the British Cemetery of Valencia

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Topic: T4.1. Conservation and restoration projects of vernacular architecture.

Abstract

Light is a phenomenon that, due to its mysticism, has often been used by different religions and philosophies. In art, this phenomenon is directly related to stained glass windows. In the Middle Ages they were made by glaziers who followed artisanal techniques. These techniques were developed in the heyday of stained glass, but afterwards they were on the verge of disappearing for several centuries. In the 19th century stained glass reappeared but the lack of knowledge about the original artisanal techniques was a great problem. Nowadays, the same problem has to be faced, stained glass windows are features worthy of preservation, but their construction and therefore their maintenance require artisanal techniques which are now disappearing. An example of the reappearance of these skills can be found in the restoration of the stained glass windows of the British Cemetery of Valencia by a special employment centre, run by specialists and carried out by artisans in glass work. This paper will present the work carried out in the recovery of this part of the Valencian traditional heritage, presenting all the stages, such as disassembly, repair and replacement. In addition, this paper will explore the results of the work, restoring the splendour of the windows to the buildings in which they are placed.

Keywords: stained glass windows; traditional techniques; British Cemetery; Vicente Sancho Fuster.

1. Introduction

Light is the *raison d'être* of stained glass windows. For this reason, they have always been related to the spiritual sense that light has, as an intangible medium that allows us to glimpse the world (Frenzel, 1985; Bonet, 2021; Lee et al., 1987; Nieto et al., 2019). This was one of the reasons why they were used in the Middle Ages to represent religious motifs. (*ruta cultural*, 2019) In the heyday of stained glass the glassmaker was considered a craftsman, on a par with tailors and bakers. This conception began to change during the Renaissance. In the 17th and 18th centuries, with the decline of stained glass windows as a feature of buildings, this skill was on the verge of disappearing. (Lee et al., 1987) However,

during the second half of the 19th century, with new artistic ideas and attempts to promote craftsmanship as opposed to mass production, the stained glass window re-emerged. (Vila-Grau, 1983) The architects created a large number of windows to be covered by stained glass, but they found a problem: a lack of craftsmen who mastered the technique. Unfortunately, the old techniques had been lost, and were only relearned slowly, and with many uncertainties, during the nineteenth century. (Lee et al., 1987) New promoters of the technique appeared, such as William Morris, who dignified craftsmanship; Louis Comfort Tiffany with his research on glass; or Domènec i Montaner, who revived old artisanal techniques. The stained glass window was reintroduced in the styles of the end of the 19th

century (*Art Nouveau, Liberty, Modernisme, Sezession...*). (Vila-Grau, 1983) (Lee et al., 1987) In most situations, the architect-craftsman dichotomy occurred. However, the glassmaker of the 20th century evolved, and was the author of his own art (Lee, 1987), becoming an artist and leaving behind the craft techniques necessary for the conservation and restoration of existing stained glass windows.

2. The British Cemetery of Valencia

In the 19th century Valencia attracted a great number of workers due to the large infrastructure projects that were being carried out, such as the port and the railway network. For this reason, several families settled permanently in the city. All these families were non-Catholic which caused them a great problem. The burials of non-Catholics were prohibited in the city cemeteries. This prohibition was constantly reinforced in the different laws about cemeteries, such as R.O.¹ 19th of March in 1848 or 30th of January in 1851 (Fernández et al., 1994). In 1872, a law that regulated the construction of cemeteries for non-Catholics was enacted. For this reason, several Protestant families acquired land in front of the general cemetery for a new one. As required in a circular of 1804, which established the documents necessary for choosing the land for the cemeteries, an architect's plan was needed to obtain the licence. This plan, by Antonio Martorell, included the construction of the perimeter wall of the cemetery and is in the municipal archive of Valencia. After an arduous struggle to obtain the permits, the inhumations began in 1889. Later, Vicente Sancho Fuster built the entrance portico and the chapel (Mora, 1912). These constructions were produced in the neo-Gothic style. The façade was a clear example of symmetry; its composition was perfect down to the smallest detail. It is

composed of a central door that gives access to the entrance portico and two side windows. One of them corresponds to the chapel; however, the other has no use since it leads directly to the interior of the cemetery without corresponding to any specific space. Despite this display of ingenuity at the compositional level, the construction's greatest value was its stained glass windows. They were made using the leaded technique, just like their Gothic predecessors. During the decline of industrialization and the civil war, the British cemetery fell into disrepair with its consequent degradation. Due to the situation of extreme abandonment that this construction suffered, the British Cemeteries Foundation in Spain decided to proceed with the recovery of this historic enclave. It was not simple, since apart from the cleaning of the cemetery and the restoration of the tombs and the façade, the need for restoration of the stained glass windows was vital. As has happened over time, traditional artisanal techniques have been lost, making it difficult to preserve some elements of our heritage. In 2017, through *Consorcio de Gestión del Centro de Artesanía de la Comunidad Valenciana* (Valencian Community Handicraft Centre), *Fet de Vidre*, an employment centre specialising in manual work on glass elements, was commissioned to catalogue and restore the stained glass windows.



Fig. 1. Façade. British Cemetery, Valencia (Source: Burguete, 2017).

¹R.O. Rule given by order of the king, not directly, but through the secretaries of the office, using the so-called reserved route. It was a characteristic rule of the 18th century. (<https://dpej.rae.es/lema/real-orden>)

3. Restoration method

The steps for the restoration of stained glass windows are those established for the restoration of any architectural feature: prior documentation, repair, and delivery of the restored item (Salmerón, 2022; Bill et al., 1994). The prior documentation consists of a data collection stage which includes historical and documentary analysis, graphic records, physical chemical study and structure analysis. The data is collected in a database which describes the state of the window, the damage it has suffered, the features which need repair and the action necessary. Once the study of the feature has been carried out and the process to follow established, the second phase begins. This phase must be carried out by a craftsman who is knowledgeable in the construction techniques of the feature. The steps to be followed in this phase have to be carried out in a methodical way, following the correct sequence so as not to lose information about the feature or spoil it. First, identification of the feature to ensure that it can be put back in place once restored. It is later disassembled and packed carefully for transfer to the workshop. Once there, the stained glass panes are cleaned and paper replicas are made to guarantee proper reassembly. Two different processes can be followed on the same window depending on the state of each of its parts. In those that are in good condition, the glass is cleaned, and the lead cord is repaired. In those parts where the glass has disappeared or is badly damaged, or where the welding bead is in poor condition, the part is disassembled; the glass is replaced by another of a similar colour to the original. Finally the stained glass is packed and returned to its original place, where it will be reassembled. The last step of the restoration is to write a report that documents all the work carried out, the problems that arose during the restoration, the solutions adopted and the final state of the window (Cortés, 2015; Ros, 2009; Salmerón, 2022a, 2022b).

4. Restoration process

The work entrusted to *Fet de Vidre* was the restoration of the stained glass windows of the chapel door, the chapel w door. In an initial study carried out by Rosa Benavent, the specialist of *Fet de Vidre*, the items needing work were inventoried and catalogued, including the state in which they were found.

4.1. Identification

Chapel door

The chapel door was built with a forged steel frame which is a separate feature in itself. The door is decorated with metal bats and sculpted steel panels as bas-relief.



Fig. 2. Detail from the chapel door. British Cemetery, Valencia (Source: Burguete, 2017).

Stained glass windows were located in this frame. They occupied an area of 1.7024 m². These consisted of three panels, two on the sides and one on the top, in which floral motifs were reflected. All three form a plant network in which daisies are located, a characteristic feature of the whole.



Fig. 3. Detail from the chapel door. British Cemetery, Valencia (Source: Burguete 2017).

Despite being located inside the cemetery, protected from vandalism, the stained glass windows showed cracks and the loss of part of their design. These panels displayed a serious deterioration of the lead, with around 10% missing. It also presented damage mainly through the passage of time (dirt, discolouration).



Fig. 4. Detail of the stained glass window on the chapel door. British Cemetery, Valencia (Source: Burguete, 2017).

Chapel window

Located on the left side of the façade, it filled a pointed arch, a characteristic Gothic shape and copied by Vicente Sancho in this neo-Gothic façade. The stained glass window occupied an area of 1.025 m². It had a similar design to the chapel door, a plant network with leaves and daisies. Due to its outdoor situation, this made it more sensitive to acts of vandalism which had broken the lower part. The loss of the lead had also caused the glass pieces to bulge. It was observed in the study carried out, that the stained glass window had undergone previous restorations. These were carried out in situ (without dismantling) and had caused damage to the lead, weakening the consistency of the stained glass. Missing joints had been replaced by lead adhesive and pieces shown in the original drawing had been removed.

Cemetery exterior window

Located on the right side of the façade, it completes the façade's symmetry. With the same characteristics as the stained glass window in the chapel, but without a defined use, since it faces the cemetery directly, it completes the intention of achieving symmetry in the façade.

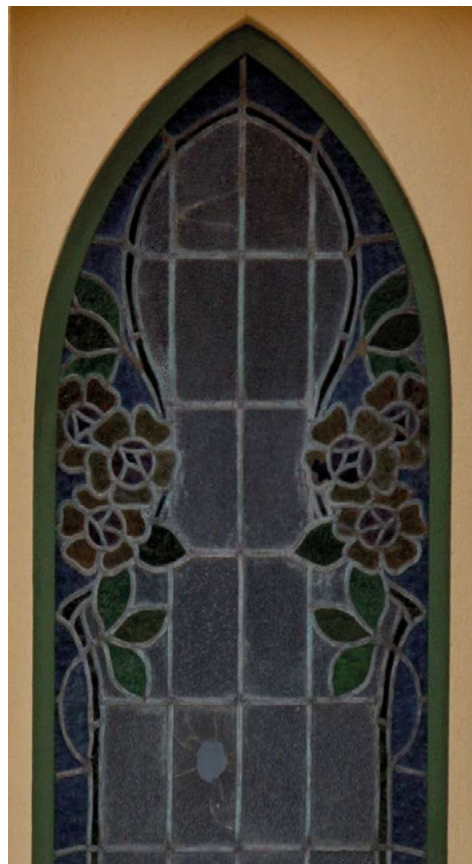


Fig. 5. Chapel window. British Cemetery (Source: Burguete, 2017).

Cemetery gate

This was the most spectacular of the four windows, both for its size and its design. The gate was built with a metal structure that contained the stained glass window and the access door. The upper part had a pointed shape following the guide of the style used for the façade. The bouquets were formed by roses and daisies that were joined by the stems of the plants. The area occupied by the stained glass

window is 2.6 m². Its structure meant that the lower glass pieces supported a great weight due to their dimensions. This caused the lead that held the pieces to lose its consistency causing bulging and detachment of pieces over the years.



Fig. 6. Cemetery gate. British Cemetery, Valencia (Source: Burguete, 2017).

4.2. Damage assessment

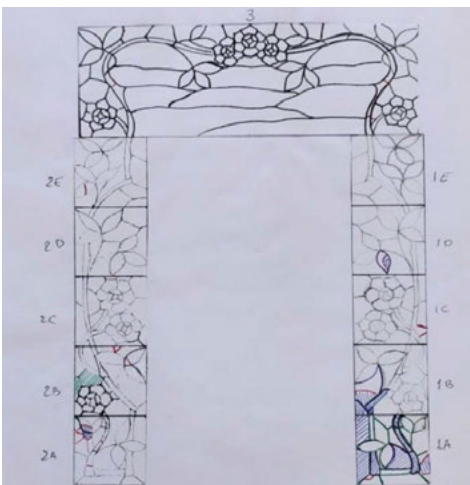


Fig. 7. Damage scheme. Chapel door. British Cemetery (Source: Benavent, 2017).

Initially, all the pieces were drawn in a diagram in which all the observed damage was recorded: broken glass (red), missing glass (blue), broken lead (green), missing lead (blue), and glass from previous restorations (green). The damage was classified into three types. One was caused by vandalism. It caused glass breakage and loss of lead sections. The second one was due to the passage of time and lack of maintenance, leading to a build-up of dirt and loss of lead. Finally, the damage caused by previous restorations that had been poorly executed. Those interventions aimed to correct the loss of parts and the deterioration suffered by the lead, and even by acts of vandalism, but they caused even greater damage to the state of conservation. These interventions were carried out without dismantling the stained glass windows. Likewise, they were not dated by those responsible for the maintenance of the cemetery. For this reason, it was believed that they were made solely in an attempt to maintain the structure of the window without any prior study. This fact not only caused damage to the window, but also complicated the restoration work and the adjustment of the budget.

4.3. Disassembly and packing



Fig. 8. Disassembly works. British Cemetery (Source: Benavent, 2017).

Once the four pieces were catalogued in terms of their shape, design, condition and damage suffered, they were prepared for disassembly. For this step, the loose parts were secured with non-aggressive adhesive tape. This step ensured that once they had been disassembled, an exact tracing of the stained glass could be made. It could then be returned to its original shape once the restoration work had been carried out.

4.4. Workshop

After dismantling, the pieces were placed horizontally on workshop tables. There, a life-size copy of each window was made by copying with charcoal on onion paper to guarantee the correct restitution of the parts that had to be disassembled.



Fig. 9. Charcoal copy (Source: Benavent, 2017).

In those parts with broken glass or where cord was damaged, the lead was removed to allow proper cleaning of glass and replacement of broken panes. The panes of glass that had been replaced in the previous restorations were replaced by glass in original colours. As an example, the daisies, incorrectly glazed with white glass, had their original yellow glass restored. Once the glass was prepared, it was welded. Following the restoration criterion that was to preserve the original glass to the maximum, the new weld beads were made with tin, following the Tiffany technique so that the restored parts were differentiated from the originals. Finally the beads were restored and cleaned. The original state was reconditioned after removing two-thirds of the stained glass to give consistency.



Fig. 10. Cardboard drawings. Chapel window. British Cemetery. Valencia. (Source: Benavent, 2017).



Fig. 11 & 12. Disassembled stained glass lead cord.; stained glass reassembly (Source: Benavent, 2017).



Fig. 13. Restoration process (Source: Benavent, 2017).

4.5. Final result

Once restored, the initial process was followed in reverse. The pieces were packed and returned to their original place. Then, it could be observed that they had recovered their transparency and original colour. In that way, they once again endowed the rooms that were illuminated with colour.

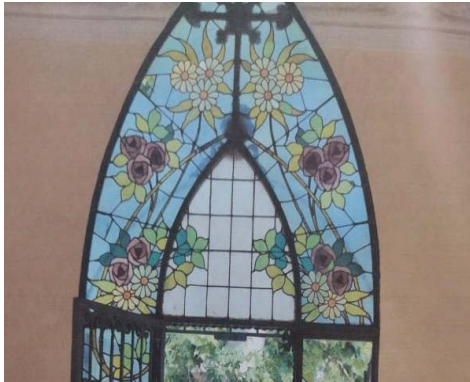


Fig. 14. Restored stained glass window, gate, British cemetery, Valencia (Source: Benavent, 2017).

Finally as the last step of the restoration, the specialist of *Fet de Vidre*, created a database in which all the necessary data for the documentation of the work carried out was collected. It contained the original state of the stained glass, the process followed for its restoration, the problems that arose during it, and the final state of the stained glass.

Finally, as the last part of the restoration, those responsible for the cemetery decided to place security glass in front of each window to protect the stained glass from vandalism. This step was effective only because the restoration was executed in a proper way and with a little maintenance could maintain their splendour for many years.

5. Conclusions

Stained glass windows are an architectural feature resulting from the joint evolution of the glass and the frame. These, in their most glorious moments, have been made by artisans but under the direction of both prestigious artists and architects. Their execution requires

traditional techniques. Stained glass can be painted or covered with lacquers or enamels. These small pieces of glass are cut into the form required by the design. They are joined principally by two types of technique. One is the traditional one, using a lead cord. Each piece is surrounded by one of these cords and joined to the following one. In this way the entire space is covered with the original design. This technique must be executed horizontally and produces plain stained glass to be assembled in the window. In the 19th century, Louis Comfort Tiffany discovered a technique to break with the traditional one. This technique is known as the Tiffany technique. The main difference is the use of copper as a support material. It is used to join the glass pieces. This material is light and malleable so the pieces can be joined with great versatility. This offers more creative possibilities, such as curved stained glass or very small pieces of glass, allowing more detail. This technique allowed stained glass to evolve from a purely architectural feature to jewellery and decorative elements.



Fig. 16. Lamps (Source: Rodríguez, 2015).

The evolution of the technique has led to the loss of the traditional ones over time. But these techniques are necessary to maintain this part of our heritage through maintenance and restoration work. This fact has been demonstrated in the restoration of the stained glass windows in the British Cemetery of Valencia. Another problem is demonstrated in this restoration. As the features were not

considered architectural, there were no previous projects or prior studies. The direct commissioning of the restoration process led to budgetary and time problems during the restoration, because they were detected after the commissioning. Technical problems could be solved since the company was made up of experienced specialists and craftsmen. However, it could have led to problematic restoration of the type that the stained glass had previously suffered. The economic and time factors were more difficult to understand since they are usually done on time and to a fixed price. The lack of knowledge of the required work and the need for a mediator between the property and the craftsman led to a lack of understanding. In conclusion, stained glass windows are part of our heritage since they are part of the evolution of Gothic, Renaissance and Modernism architectural styles. The traditional techniques used for its construction are necessary for its maintenance and recovery. These techniques are carried out by artisans who should be valued since our heritage depends on them. Unfortunately, at the end of this article, the representatives of *Fet de Vidre* reported the closure of this centre due to business problems, with the considerable loss caused by the repeated disappearance of the trades that allow us to recover traditional construction techniques.

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