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The Wagnerian Windows in the Cercle del Liceu of Barcelona: a Unique Scenography Made of Glass

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Les vitraux wagnériens du Cercle del Liceu de Barcelone : une scénographie en verre unique – Résumé

À l'apogée de la fièvre wagnérienne en Catalogne, le scénographe Oleguer Junyent, le peintre et décorateur Josep Pey et le verrier Antonio Bordalba ont réalisé un ensemble de quatre vitraux décrivant des scènes de la Tétralogie de Richard Wagner L'Anneau du Nibelung pour le club privé masculin du Cercle del Liceu de Barcelone, uni au palais de l'Opéra du Liceu.

Ces vitraux décrivent les scènes principales de quatre des épisodes de la Tétralogie : L'Or du Rhin, avec les filles du Rhin et Alberich, La Walkyrie avec le sommeil de Brünnhilde tandis que Wotan la protège grâce au feu du dieu Loge. De Siegfried est représentée la scène des murmures de la forêt. Le dernier vitrail représente la mort et la marche funèbre de Siegfried du Crépuscule des dieux.

La commande des vitraux a eu lieu lors de la rénovation du hall du Cercle del Liceu, dirigée par l'architecte Juli Batllellé en 1903. Ces vitraux sont un ensemble unique en Catalogne non seulement quant au thème (fig. 1) mais aussi quant à la conception scénographique des panneaux qui témoignent d'une véritable direction artistique de Junyent et de la collaboration de son ami et collègue, Josep Pey, qui était responsable de la réalisation des cartons suivant ses instructions.

The Wagnerian windows in the Cercle del Liceu of Barcelona: a unique scenography made of glass – Abstract

At the peak of Wagnerian fever in Catalonia, the scenographer Oleguer Junyent, the painter and interior decorator Josep Pey and the stained-glass maker Antoni Bordalba, made a set of four windows depicting scenes from Richard Wagner's tetralogy "The Ring of the Nibelung" for the men's private club Cercle del Liceu of Barcelona, connected to the Opera Palace Liceu.

These windows depict principal scenes from each of the four episodes of Wagner's tetralogy: the Rhinemaidens and Alberich from *Das Rheingold*; the sleep of Brünnhilde while Wotan protects her with the god Loge's fire from *Die Walküre*; the scene of the forest murmurs from Siegfried; and the death and the funeral march of Siegfried from *Götterdämmerung*.

The commission for the stained glass was part of the refurbishment of the entrance hall of el Cercle del Liceu, managed by the architect Juli Batllellé in 1903. These windows are a unique set in Catalonia not only

La réalisation des vitraux a été confiée à l'atelier d'Antoni Bordalba, auteur de certains des vitraux les plus spectaculaires du début du XX^e siècle.

En conséquence, ces vitraux sont des « œuvres d'auteur » réussies qui montrent la parfaite symbiose de ces trois maîtres des arts décoratifs modernistes catalans.

La conservation de ces vitraux est particulièrement compliquée car ils sont composés de deux couches de verre et même trois dans certaines parties. L'utilisation de verre opalescent et de différentes couches de verre suggèrent que les auteurs connaissaient bien le travail de Tiffany et Lafarge, bien que ce fait n'ait pas encore été démontré. Cette disposition des vitraux provoque l'accumulation de poussière entre les verres provoquant de graves distorsions dans leur perception.

Lors de la restauration de 2019, on a trouvé de la poussière entre les couches de verre ainsi que sur la partie intérieure des panneaux. Les derniers travaux de conservation dirigés par les architectes Dilme-Fabré, la société de restauration Urcotex et J.M. Bonet Vitralls, permettent aux vitraux d'être visibles de la rue, du côté extérieur.

Cette communication est une analyse approfondie de ceux-ci du point de vue historique et présente le rôle de chaque artiste au cours du processus de conception. Aussi du point de vue technique, avec la description de la technique inhabituelle utilisée en profitant de sa récente conservation-restauration.

because of the themes of the scenes (fig. 1), but also the scenographic conception of the panels that shows the true artistic direction of Junyent and the collaboration of his closest friend and workshop colleague, Josep Pey, who was responsible for the painting of the cartoons following his instructions. The construction of the windows was carried out by the workshop of Antoni Bordalba, author of some of the most spectacular windows of the first years of the 20th century. As a result, the windows are a successful "author piece" that shows the perfect symbiosis of these three masters of the decorative arts of Catalan Art Nouveau.

The conservation of these panels was especially difficult since the artist used two layers of glass and even a third one in some panels. The use of opalescent glass and plating suggests that the makers were aware of the work of Tiffany and Lafarge although this fact has not been proven yet. This arrangement trapped thick layers of dirt between the two pieces of glass causing heavy distortion in the perception of the windows.

The 2019 restoration found dirt not only between the layers but also on the interior of the panels. The windows had never been cleaned using wet methods and the inner side was brown from the tobacco smoke. Probably right after the installation, the cleaner in charge realized that the layers trapped the liquid used for cleaning, and stopped doing so. The last conservation works led by Dilme-Fabré Architects

and Urcotex building conservation company allowed the windows to be seen from the street.

This communication will be an in-depth analysis of this stained glass from a historical point of view, while recovering the role of every artist involved during the process of conception, and also from a technical point of view, with the description of the unusual techniques used, on the occasion of its recent conservation and restoration.



Fig. 1. The four Wagnerian windows after the conservation campaign of 2019.

The Cercle del Liceu private club

The Cercle del Liceu is an English style private club in Barcelona Rambla. It opened its doors in 1847 and shares the building of the opera palace Teatre del Liceu. It holds one of the most remarkable sets of art nouveau collections of Catalonia. At the entrance of this club, one of the features that draw more attention to the decorative arts of the building is the magnificent stained glass installed at the foyer.

In 1900 the administration and the members of the society of the Cercle saw the need to renew the installations to match the prestige and comfort that the institution required. To begin with, a first refurbishing restructured various spaces. By express will of the associates, prominent artists such as Alexandre de Riquer, Josep Pascó or Ramon Casas were commissioned to take charge of the work on the hall of the main floor, the waiting room known as *La pecera* (the fish tank) and the smoking room known as “La Rotonda” respectively. They all were granted total freedom to carry out their commissions.¹

In 1903 the building company of Enric Pi i Cabañas (1863–1913) was commissioned with the refurbishment of the entrance hall and the dining room on the ground floor, among other work.² The architect Juli Batllellé, a frequent collaborator with Enric Pi, signed the plans. Pi distributed responsibility for the decorative arts among different artisans, as described in the documentation he presented to the administration of the Cercle del Liceu in 1905.³ The renowned scenographer Oleguer Junyent (1876–1956) was the art director for the refurbishment. In the entrance hall, the main intervention was the opening of four large windows by Carrer de Sant Pau to replace some smaller ones.⁴

In Catalonia at the outset of the 20th century, there was a huge fascination with the work of Richard Wagner. For instance, in 1901, the first Wagnerian association was organized and the fever for Wagner extended soon to the fields of literature, plastic arts, and decorative arts.⁵ Therefore, the subjects chosen to fill these four windows were Wagnerian scenes drawn by the



Fig. 2. Oleguer Junyent, Josep Pey, and other draughtsman working on the cartoons of the Windows.

¹ Act book of the Government board of Cercle del Liceu 1900 / 1901, Cercle del Liceu Archive.

² Josep CASAMARTINA, *Juli Batllellé: un gaudinià oblidat*, Sabadell, Museu del Gas, Fundació Gas Natural Fenosa, 2011, pp. 331-333.

³ “The government board of Cercle del Liceu, motivated by the will to introduce some certain improvements in the facilities of the society, commissioned me with the writing of a project at first, and to estimate a quotation for the refurbishing works. This was presented on 25 May 1903, and then I was commissioned with the direction, execution and administration of the project, anticipating funds for the payment of the bills of the different artifex and workmen involved”. Pi, Enric, *Memoria presentada a la Junta de gobierno del Círculo del Liceo*, Barcelona, Ed. La Renaixença, 1905. Enric Pi wrote this report in order to explain the high increase of the expenses during the works.

⁴ On 27 May 1903, the society requested the authorization for the refurbishing to the Town Hall and not until 9 November 1904 did they obtain the work permit. Arxiu Municipal Contemporani de Barcelona. Expedient: 718 (3p). “Año 1903. Comisión de Fomento. Permiso a Baldomero Sánchez para practicar obras de reforma en el “Círculo del Liceo” sito en la Rbla. del Centro y calle de S. Pablo”. We thank Josep Casamartina and Valentí Pons for the information about this file. Two days before Enric Pi had presented his proposal to the government board of Cercle del Liceu.

⁵ For more information see Lourdes JIMÉNEZ, *El reflejo de Wagner en las artes plásticas españolas. De la Restauración a la Primera Guerra Mundial*, PhD thesis, Barcelona, Universitat de Barcelona, 2003; Alfonsina JANÉS, “L’obra de Richard Wagner a Barcelona” Barcelona, Rafael Dalmau, 2013.

painter Josep Pey (1875–1956),⁶ under the lead of Junyent. Moreover, during those years Junyent directed the scenic decoration for some operas of the acclaimed composer at the Gran Teatre del Liceo.⁷

Almost at the same time, Pi and Batllell were also working for Burés family, one of the wealthiest bourgeois families of Barcelona, whose fortune derived from their prolific textile industry. Juli Batllell was the architect commissioned to design the house of Antonia Burés. Enric Pi's company also built the house of Francesc Burés (brother of Antonia Burés). On this work Pi collaborated with Miquel Pasqual and Francesc Berenguer as architects and with Oleguer Junyent on the decoration of the palace. The large skylight and the magnificent windows of the central hall were also made by Bordalba studio. In this case the panels are not signed but do have the characteristic cast floral glass and jewels.

The artists Pey and Junyent, in addition to being close friends since their studies at la Llotja, shared a workshop and frequently worked together on decorative arts projects. A little-known photo (fig. 2) that is illustrative of the role of the artists at work is preserved.⁸ Junyent appears holding a baton "directing" the works during the design of the cartoons, while Josep Pey holds a brush and is helped by two workers. In the foreground, the palette of a scenographer is especially noticeable. This image proves that Pey was not only responsible for the design but also for moving it to the full-size cartoon.⁹

This set of stained-glass panels is not the only one that Josep Pey drew; those for the Caixa de Sabadell and at Casa dels Canonges of Barcelona, both under the direction of the architect Joan Martorell i Montells, were also created by him.

The four windows depict scenes from four chapters of Wagner's Tetralogy: the Rhinemaidens and Alberich the Nibelung, from *Das Rheingold*; Brünnhilde lying asleep from *Die Walküre*; the forest murmurs from *Siegfried*; and Siegfried's Death and funeral march from *Die Götterdämmerung*.



Fig. 3. European illustrations of Wagnerian's scenes that may have been an influence on the artists.

⁶ The name of Josep Pey, however, does not appear anywhere in the windows. The windows are signed only by Junyent and Bordalba.

⁷ For more information about Oleguer Junyent see Francesc MIRALLES, *Oleguer Junyent*, Barcelona, Cetir Centre Mèdic, 1994; Clara BELTRÁN, *Oleguer Junyent i Sans, pintor-escenógrafo. Entre la tradició y la modernidad (1899-1936)*, doctoral thesis, Barcelona, Universitat de Barcelona, 2020.

⁸ Enric JARDÍ, *1000 families catalanes*, La Cultura. Barcelona, Dopesa, 1977, p. 99. It was used to describe the work of Junyent brothers, but was not used in other publications.

⁹ The photographic records of the cartoons were reproduced in two contemporary publications: *Arquitectura y Construcción*, year IX, no. 15, 6 July 1905, pp. 219, 221, 223 and in *Il·lustració Catalana*, no. 101, Barcelona, 7 May 1905. Those pictures are still preserved at the private archive of Oleguer Junyent. We thank Sabine Armengol, curator of the collection for her help during the research.

The drawing for Brünnhilde's scene is inspired by the poster that Eugène Grasset designed for the premiere of *Die Walküre* at the Paris Opera in 1893.¹⁰ The figure of Siegfried at the forest murmurs scene seems to be influenced by the illustration made by Reinhold Max Eichler published in the magazine *Jugend* in 1900.¹¹ Moreover, there are similarities between the Rhinemaidens window and a postcard depicting the same scene preserved among the collection of the musicologist Joaquim Pena.¹² The two figures of Alberich share a close similarity. Also, the interpretation of the scene by the German painter Konrad Diehlitz or the French Henri Fantin-Latour seems to have inspired Junyent and Pey in the composition of their project (fig. 3).

The main trait of these windows is the great expressivity of the figures and composition. Oleguer Junyent and Josep Pey treated these pieces as if they were theatrical scenery, and to achieve the desired effect, they probably had the assistance of the stained glass maker Antoni Bordanba (1853–??) who provided the needed technical means to reach their goal. They used several different glass types: opalescent, rolled glass, cast glass, flashed etched glass and plating. This fact is especially noticeable in the *Rhinemaidens* window where the faces are plated on the inner side with textured rolled glass to create a blurred effect that generates the perception that the figures of the mermaids are underwater.

The Bordanba studio was also responsible for the decoration of the doors at the entrance hall, which are especially valued for the use of beautiful and uncommon floral cast glass.

Thanks to the writings preserved in the notebook of Josep Pey it is known that during August 1903 the artist started the painting of the stained glass; by the next month he had already finished the second window, and he had finished them all by November.¹³ Junyent earned 5,000 ptas. (1,000 ptas for each of the windows and 1,000 ptas. for the “whole management”) and he was also in charge of paying Pey for his work. From another document preserved at the Cercle del Liceu, we know that the work was finished in August 1905 and there was just one last payment to be made by the building company of Enric Pi to Antoni Bordanba.¹⁴

The workshop of Antoni Bordanba, limited partnership

This studio was founded on 22 August 1900 and bears the name of its artistic director Antoni Bordanba Simó. This limited partnership was established by Antoni Bordanba, as a regular associate, and by Lluís Buxeres Abad¹⁵ and Antonio Codorniu i Forné. During the initial years of the company, Antoni Bordanba held the presidency of the company and signed the legal documentation. The company was devoted to the trade of glass, to flat glass produced locally and worldwide, and to its decoration and acid etching.¹⁶ In the notarial deed of the dissolution of the company, it is described that A. Bordanba, unlike the other associates, did not bring capital to the company for the foundation of the business, but rather, his experience and theoretical knowledge.¹⁷ The company was active for five years and had its facilities in Ronda de Sant Antoni, nº 52-54 (it changed to 66 some years later) and in Valldonzella street, nº 62.¹⁸ The company A. Bordanba dissolved on 4 April 1905 due to economic problems, but the very same day a new company was constituted named Buxeres y Codorniu. In the new business A. Bordanba does not appear at all. This new company was directed by Lluís Buxeres and Antonio Abad, and their sons Pedro Codorniu

¹⁰ Lourdes JIMÉNEZ FERNÁNDEZ, “Escenografías wagnerianas en Cataluña: distintas propuestas formales a la introducción del wagnerismo en la época del Modernisme”, *Boletín de Arte*, no. 18, Departamento de Historia del Arte, Universidad de Málaga, 1997, p. 242; Magdala PEY, “Josep Pey, anònim col.laborador de moblistes i decoradors” in *Gaspar Homar, moblista i dissenyador del modernisme*, Barcelona, Museu Nacional d’Art de Catalunya, Fundació la Caixa, 1998, p. 159.

¹¹ Lourdes JIMÉNEZ FERNÁNDEZ, “Wagner i els modernistes catalans” in *Richard Wagner i Adrià Gual. Els plafons perduts de l’Associació Wagneriana* (exhibition catalogue, Barcelona, Departament de Cultura de la Generalitat de Catalunya, Museu d’Història de Catalunya del 29 de maig al 29 de setembre de 2013), 2013, pp. 92-93.

¹² Biblioteca de Catalunya (BC) Fons Joaquim Pena.

¹³ PEY, p. 159.

¹⁴ *Documentació comptable béns mobles 1905*, Cercle del Liceu de Barcelona.

¹⁵ One of the associates, Lluís Buxeres Abad (1838-1909) was a prominent lawyer.

¹⁶ Arxiu Històric de Protocols de Barcelona, Notari Ignasi Gallissà AHPB 1347/ 171, 22 d’agost de 1900, Registre mercantil de Barcelona, Volum 52, Foli 108, Full 4722, inscripció 1.

¹⁷ Arxiu Històric de Protocols de Barcelona, Notari Marià Ródenas AHPB 1457/ 7, 4 d’abril de 1905.

¹⁸ *Anuario Riera: guía general de Catalunya 1902*, p. 536.

y Curtó and Emilio Buxeres y Bultó joined the business.¹⁹ The company remained active, and despite changing its name, lasted until 1930.

Unfortunately, not much information was preserved about Antoni Bordalba. It is known that he was born in 1853 and he had been an apprentice at the studio of Antoni Rigalt i Blanch, the leading company of the Art Nouveau period.²⁰ Surprisingly, after the dissolution of the company in 1905, there is hardly any professional reference to him. Between 1917 and 1920 he appears again in some advertising but only as a simple glazier, for the installation of flat glass.

Among his work as a stained-glass maker, the windows for Can Buxeres at the city of Hospitalet de Llobregat, made in 1901, stand out. The house was a property of one of the associates of the company, however, unfortunately, the windows were destroyed. A year later he worked on the glass for the bar Torino at nº 18 of Paseo de Gracia in Barcelona. The window at De la Rutlla street nº 18 at Terrassa depicts a female figure with long hair surrounded by floral cast glass. The artist worked for several bourgeois Barcelona palaces such as the house of Antonia Puget (1904–1907), casa Felip (1901) and Modest Andreu's house (1902–1906). He also worked for the studio-house of the photographer Pau Audouard Deglaire when he set his business in 1905 on the ground floor of a brand new Lleó Morera house at Paseo de Gracia of Barcelona by the architect Lluís Domènech i Montaner. The windows that decorate the Gran Hotel de Palma de Mallorca (1903), build by the same architect, were also made by him.

Between 1902 and 1911 they were the suppliers of stained-glass windows for the furniture of the firm Busquets, first as A. Bordalba and later as Buxeres y Codorniu, and appear in the account books with the acronym B y C. This stained glass company attended the V Exhibition of Fine Arts and Artistic Industries held in Barcelona in 1907, collaborating with the furniture maker Joan Busquets, who was responsible for decorating room XXIII, making stained glass for various doors.

This company is characterized by the modernity of its production, very much in the line of French Art Nouveau. As a very specific feature of this maker the use of floral cast glass and polished geometric glass jewels is almost unique to this studio and give its windows a very distinctive personality that allows the identification of the author and makes them stand out from the production of other contemporary studios.

The use of these pieces was also highlighted by Bordalba and afterward by Buxeres y Codorniu, as something unique of their making "relief flowers and glass leaves and jewels of all sorts". The company had a large production of architectural stained glass and an important role as a supplier of stained glass for furniture.²¹

Technical analysis and conservation problems

The Wagnerian stained glass is a set of four large windows of 320 × 200cm, glazed with round gilded lead. The wooden frame was designed to be opened and is divided by iron T bars coated with brass on the inner side. The installation system is unusual: an additional L iron profile is welded on the perimeter of each panel. This structure is attached to the T bars with screws. On the external side, there are many reinforcing bars, all of them shaped to the lines of the lead matrix.

By far the most unusual characteristic of these windows is the plating of all the layers of glass inside the same lead came. This technique allowed them to attain more hues, depth, and blurred effects. That also meant that the material expenses and the cost of execution were doubled, as the manufacturing required much more labour.

¹⁹ Arxiu Històric de Protocols de Barcelona, Notari Marià Ródenas AHPB 1457/ 7, 4 d'abril de 1905. Registre mercantil de Barcelona. Volum 66, Foli 17, Full 6411, inscripció 1.

²⁰ Joan VILA GRAU, Francesc RODON, *Els vitrallers de la Barcelona Modernista*, Polígrafa sa. Barcelona, 1982, p. 62; Manuel GARCÍA MARTÍN, *Vidrieras de un gran jardín de vidrios*, Catalana de Gas y Electricidad, Barcelona, 1981, p. 40; Núria GIL FARRÉ, *El taller de vitralls modernista Rigalt, Granell & Cia. (1890-1931)*, Tesis doctoral, Universitat de Barcelona, Departament d'Història de l'Art, 2013, pp. 96-98.

²¹ Núria GIL FARRÉ, "La decoración con vidriera artística en el mueble doméstico modernista catalán" in *Virtuosismo modernista tècniques del moble* (ed. Núria GIL FARRÉ). Associació per a l'estudi del moble, Ajuntament de Barcelona, Barcelona, 2019, pp. 131-149.

Pey praised in a short article²² devoted to the stained-glass craft (1907) that the panels were made without enamel. In the same article appear low-quality pictures of the Wagnerian windows. These pictures seem to be the same as preserved at Oleguer Junyent Studio, although the second are in a larger format and better quality.

The windows have similarities with the renowned American stained glass by Louis Comfort Tiffany and John Lafarge. The amount of opalescent glass is large and the plating, so common for those artists, is very unusual for Catalan studios. It has to be assumed that either Oleguer Junyent, Bordalba or both knew the methods of the American glaziers, either through publications or by visiting World's Fairs. Tiffany attended the Chicago World's Fair in 1893 and Paris in 1900.²³ Rigalt, a renowned Catalan stained-glass maker, wrote a review admiring the work presented by Tiffany in Paris,²⁴ praising his art in choosing colours. He described Lafarge as the developer while Tiffany as the one who perfected the method. However, some American art historians describe older uses of the plating technique made by Donald Mac Donald in 1873.²⁵ American stained-glass makers showed the tendency to avoid the use of enamel to achieve more vivid and pure colours. Carnations and *grisaille* are used mainly only for the hands and faces.²⁶

The stained glass of the Catalan Art Nouveau period was ruled by a spirit of technical innovation and there is no doubt that the leading studios knew the work of the two American artists. Glass plating was a common technique used in isolated pieces, for instance in the 1880 windows by Amigó studio and the painter Agustí Rigalt at Barcelona Cathedral or the window presented in the 1888 Barcelona exhibition by Antoni Rigalt.

The Wagnerian windows were made from mouth-blown glass, but there is also some industrially made glass, textured glass, flashed acid-etched glass and a number of pieces of American glass, which vary from opalescent shades to cathedral glass in two or three colours. Window number four is especially interesting because from the interior it is entirely plated with a deep textured glass that is locally known as *nevat*. The intention was to create a blurred environment that evokes an underwater landscape.

For surface decoration, *grisaille* paint, silver stain and enamel were used. Both the interior and exterior glass were painted and fired. No cold paint or patina was detected. The use of *grisaille* paint for contour and modelling followed local traditional glass painting techniques. In the faces, carnation was applied using a badger brush, and highlights relieved with a stiff brush. The background pieces are mostly painted with *grisaille* modelled by stippling. Many background parts are made using acid-etched flashed glass and detailed with enamel. It can be said that the carnation and the faces are mostly painted from the interior, however, there are exceptions.



Fig. 4. Siegfried's face previous to restoration (left) and the same pieces of glass showing the two layers of glass and the trapped dirt (right).

²² *Arquitectura y Construcción*, 1905.

²³ Jasmine ALLEN, *Windows for the world. Nineteenth-century stained glass and the international exhibitions, 1851-1900*, Manchester University Press, 2018, p. 189.

²⁴ Antoni RIGALT I BLANCH, "Presentación de algunas muestras de vidrieras de color, y explicación de los procedimientos seguidos para pintar y construir las mismas, desde la aparición de este arte, hasta nuestros días". *Memorias de La Real Academia de Ciencias y Artes de Barcelona*, 2 (3a época), Barcelona, 1900, p. 291-297.

²⁵ Lance KASPARIAN, "Early Applications of "Plating" in 19th Century American Stained Glass" in *Techniques du vitrail au XIX^e siècle. Forum pour la conservation et la restauration des vitraux*, Institut du patrimoine wallon, Namur, 2007, p. 69-79.

²⁶ Peter CORMACK, *Arts&Crafts stained glass*, Y. U. Press, 2015, p. 200.

There were numbers of broken pieces and some minor paint deterioration due to condensation and moisture retention between the glass layers. The dirt between layers of glass required a decisive intervention which brought on a great improvement, both visually as well as stabilizing the conservation status of the glass and the paints (fig. 4).

The glass was well preserved almost without lacuna, corrosion or iridescence. Enamel has significant signs of decay in the areas where dirt was trapped between the layers. In one type of glass some cracking had been detected and the glass collapsed in small fragments. The remaining layer of glass was retouched during the 1980s with acrylic paint. Cracking in advanced stages can result in the complete disintegration of the glass into little pieces. This phenomenon can be observed in the leaves in the centre of window number two, *Forest murmurs*, as well as in the garment of one of the pallbearers in window number one *The Funeral March of Siegfried*. The cracking process is complex and mostly appears in glasses with low calcium content. Some alkaline metals from the glass matrix can dissolve and leach to the surface, leaving gaps in the material. This phenomenon is dependent on relative humidity, changes in which can accelerate the deterioration.²⁷

Patrimonio 2.O, at the request of Urcotex, has collected and analysed some samples of the crizzled glass, confirming its instability. The deterioration is accelerated by the fact that the pieces were produced using a mixture of two glasses with different compositions.

Comparing pictures preserved at Oleguer Junyent Studio, pictures from 1981²⁸ (photo by Manuel Garcia Martín) and the pictures taken prior to conservation (2019), the progression of the deterioration can be tracked. From the same pictures, it can also be seen that the dust in between layers had increased and, in some cases, slightly changed location. The interior side had tobacco stains that required particular cleaning methods.

Dirt build-up was especially noticeable with textured glass or at the lower part of the glass pieces and it distorted the overall readability dramatically. Thick layers of dust retain moisture and accelerate paint and glass deterioration.

Stained-glass windows were dismantled and transported to the conservation studio. Despite the existing lead conservation approaches²⁹ described in similar cases, in order to resolve the main conservation problems, preventing further paint and glass deterioration and restoring original readability, the panels had to be fully disassembled. This intervention forced the sealing of every instance of glass plating to prevent dirt accumulation. For glazing, round lead was used, matching the measures and shape of the old ones. To reproduce the appearance of the original, the lead was gilded. The bent reinforcing bars were reutilized. The exterior wooden structure with a lightbox was dismantled and replaced with protective glazing that allows access to natural light and easy maintenance from both sides.

Conclusions

This is one of the most important stained-glass ensembles of Catalan Modernism. It stands out in different aspects, such as the uniqueness of its iconography of operatic subject matter, as well as its plating technique. It is a very careful work designed to give a theatrical feel to the windows resembling the aim sought for an opera scene. To execute the work, the stained-glass maker Antoni Bordalba had to use all his extensive technical knowledge and his skill as a master, to accomplish the requirements of an exceptional proposal by the painters Oleguer Junyent, artistic director of the refurbishing of the entrance hall and the painter Josep Pey who carried out the drawings.



²⁷ Stephen P. KOOB, *Conservation and Care of Glass Objects*, Archetype Publications, 2006, p. 117-130.

²⁸ Manuel GARCÍA MARTÍN, *Vidrieras de un gran jardín de vidrios*, Catalana de Gas y Electricidad, Barcelona, 1981, p. 63.

²⁹ Daniela PELTZ, Victor ROTHMAN, "An examination of the lead matrices of 19th century american plated opalescent stained-glass windows by John La Farge" in *Techniques du vitrail au XIX^e siècle. Forum pour la conservation et la restauration des vitraux*, Institut du patrimoine wallon, Namur 2007, p. 197-207.