

Conservation History and Processes

In 1972, stained glass conservation was still in its infancy.



Many techniques and materials were still to be developed and tested, but it was acknowledged from the outset that the rigorous approach of the 19th century must be a matter of the past, and that minimal intervention would have to be paramount.

For the glass at Canterbury, restoration would be permitted only in the true sense of the word, namely as the return of a design that is known, rather than

resorting to what is now termed creative restoration.

When thoroughly researched and carried out professionally, creative restoration may deliver good results, not only aesthetically, but it nevertheless interferes considerably with the authenticity of the glass and thus can easily destroy its value as a historic work of art.



Because of the work of the Austins and Caldwells, the question of creative restoration hardly ever arises at Canterbury Cathedral.

The cathedral's stained glass conservation studio, an autonomous department of the Dean and Chapter, can therefore exclusively concentrate on the four major steps which comprise modern conservation: the documentation of the pre -and post-conservation condition of the windows in general and the panels in particular, the careful cleaning of the panels, the consolidation and stabilisation of its components, and their protection against further damage.



For a long time documentation was the poor cousin of conservation, even though the restoration history of Canterbury Cathedral, like that of so many other buildings, had provided ample evidence for the importance of adequate record keeping.

In 1854, “a particular description of what has been done by Mr. George Austin to the old windows of the church” was shown at a Chapter meeting, and it was agreed to ask him to keep this record in a book. However, no such account has survived.

These records would not only have provided vital information of the state of preservation of the glass in the first half of the 19th century, they would also have helped to understand more readily why the restorers of the time felt able to work so liberally on the cathedral's inheritance.

The outcome of Victorian and post-Victorian restorations has shown quite clearly that it is impossible to foresee what future generations might want to learn from the glass, so efforts are made to cover all aspects of the work and the materials.



This is done first and foremost with photographs as an unbiased record, which is then augmented by conservation diagrams and written accounts as an equally important source of information.



Following their removal from the window frame, all stained glass panels are therefore immediately photographed in transmitted and reflected light, in black and white prints, colour transparencies and increasingly in digital form, to record their condition before conservation. Thereafter, rubbings of the lead pattern are taken of each panel, which form the basis of the conservation charts to be produced for the indication of particular conservation measures or conditions as, for example, the amount of fractures in the glass.

Whilst all these initial steps can be undertaken by a team of conservators, from the next step onwards, ideally only one conservator should be responsible for the treatment of a given panel. First of all, the conservator produces a written report of the condition of the panel. This covers as accurately as possible the condition of the glass its degree of surface dirt, its fractures, microcracks, corrosion layers or any other form of decay such as

pitting or decomposition; of the lead matrix corrosion, structural stability, fractures in the lead comes or at solder joints as well as the condition of the paint pigments – whether they are stable, unstable, loose or lost. This report determines the actual degree of all the conservation measures to follow, which may differ considerably from panel to panel.



Once familiar with the particulars of the panel, the conservator can begin by carefully removing surface accretions on the glass, which may involve dry cleaning or the gentle rolling of a wet cotton wool bud over the surfaces. Dependent on the condition of the paint pigments, this procedure can be carried out with the naked eye, but in more delicate areas, the use of a microscope becomes imperative.

The next step may then involve the removal of more tenacious surface accretions with a scalpel, a glass fibre brush, or ultimately with the airbrasive equipment, which are all tools requiring the patience and skill of an experienced conservator.

Cleaning is thus a time consuming and painstaking process, due to the cautious approach required to avoid causing damage to the glass surface and the pigments. But despite such necessary restraint, this kind of cleaning improves significantly the translucency of the glass, bringing the colours closer to their original luminosity.

Cleaning will also reveal further the condition of the glass, the paint pigments and the lead. Localised consolidation where required can now begin.

Regarding the glass, this means that single cracks will be stabilised in situ with an acrylic or epoxy resin of very low viscosity so that it can penetrate the fracture.



Multiple cracks are repaired by removing the glass fragments from the leadwork, by edge-bonding them with a resin or a silicone and by backplating the re-assembled piece to give it additional strength before reinserting it into the leadwork.



Until the beginning of the 1990s, it was common in Canterbury to routinely replace the lead, ignoring the fact that this material is also of historic, as well as of aesthetic importance. Ever since, the leadwork is retained as long as feasible and consolidated instead, meaning that only in exceptional circumstances panels are partially dismantled and re-leaded, when material fatigue would otherwise endanger their stability. However, since restoration and conservation had

been an on-going process since 1819, it is true that all the glass at Canterbury has been re-leaded at least twice, which means that no Medieval lead has survived in situ in the cathedral.

Loose paint pigments can be consolidated with an acrylic resin, but when it comes to areas where the pigments have vanished, this loss has to be accepted as a result of centuries of decay. For technical reasons, it is impossible to re-paint and re-fire the glass, and even if it was safe to do so, re-painting represents an irreversible intervention which destroys the historical value of the glass and is therefore unacceptable. Only in a few instances, such as the bold lettering of inscriptions, can lost paint lines be restored by painting them onto a separate piece of clear glass, which is then attached to the reverse side of the original as a back-plate, making the inscription intelligible again in a reversible manner, without affecting the historic settings of the glass.



After completion of conservation, another set of photographs and a final report form the end of the studio work. However, to return the panels to the window without protection would mean to re-start yet again the cycle of decay. Exposure to wind, rain, condensation, frost and heat would eventually result in the final destruction of the glass. It is therefore imperative to separate the two functions a

stained glass window fulfils, namely to perform simultaneously as a weather-shield and as a work of art. At Canterbury, this is achieved by creating a protective environment for the historic glass through the introduction of an



isothermal glazing system: A secondary layer of lead-light panels, copied from each respective original panel and glazed in kiln-distorted clear glass. This new layer is installed in the original glazing groove, while the historic panels are housed in a sub-frame a few centimetres inwards of their original location. The interspace between the protective and the historic panels is ventilated to the interior of the cathedral, thus keeping the historic glass always at room temperature or above. The accumulation of moisture on the glass, which is the main catalyst for its corrosion, in form of condensation or rain, is thus averted, as is the occurrence of sudden movements under wind pressure.

Protected in this way, the stained glass of the cathedral will remain the source of inspiration and enjoyment for many generations of worshippers and visitors to come.