

Conservation Guidelines

Decorative Plasterwork

Foreword

This series of booklets has been produced by the Department of the Environment to increase awareness of the value of our architectural heritage and to provide information on the basic principles and methods of conservation and restoration. The titles in the series are listed on the back of each booklet.

These texts are not intended to be comprehensive technical or legal guides. The main aim is to assist architects, builders, owners and others, in understanding the guiding principles of conservation and restoration. They will facilitate the identification of the most common problems encountered in heritage buildings, and indicate the best solutions. It should be appreciated that specialised aspects of conservation and restoration will require professional expertise and more detailed information.

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Summary of Conservation Principles

- Research prior to planning work
- Minimum intervention - repair rather than replace
- Respect the setting.

Summary of Conservation Procedure

- Research and analyse history of building
- Survey building and identify original material
- Plan work according to conservation principles
- Use experts where necessary
- Record all work
- Install maintenance procedures.

Introduction

Many historic Irish buildings contain a wealth and rich diversity of decorative plasterwork, dating from the 18th and 19th centuries. It contributes significantly to Ireland's cultural inheritance. Unfortunately, over the last 30 years a considerable amount of this work has been lost or destroyed due to demolition of many Georgian and Victorian buildings.

Recently, there has been a growing appreciation of the distinctiveness that decorative plasterwork can give to a room. Its presence is now used as an important selling point when period properties come up for auction; indeed to remove such detail can only devalue a building.

At present there seems to be a distinct lack of information on the conservation and restoration of decorative plasterwork, due to the nonexistence of any organisation to supply such information, and to set down standards of procedure and practice.

This booklet aims at conveying a basic knowledge of what is involved in the effective conservation and restoration of decorative plasterwork. Such work should not be undertaken on a D.I.Y. basis, as the restoration of historic plasterwork requires the assistance of an expert. It is hoped that, with the aid of this booklet, owners and others will be able to identify the source of any problem, and be able to evaluate the methods proposed to solve them.

Far too often, restoration schemes are tendered out, and dictated by the cheapest price, without criteria of methods laid down as to how the work should proceed. The cheaper price may involve cutting corners or lowering standards. For example, restoring an enriched cornice should involve the plain face run or cast, with the enrichment cast separately and bedded into the plain face afterwards. It might be more expensive to do this, but it would give the proper quality of finish. Unfortunately, this does not always happen.

Brief History

Most of the decorative plasterwork that was executed throughout Ireland, spans a period of over 200 years. While there are earlier examples, such as in Ormonde Castle, Carrick-on-Suir (c.1585), most early surviving examples date from around the 1720s, and continue up to the early 1900s. A wide variety of styles was produced, employing a number of methods and techniques to execute these decorative schemes in situ.

Modelling

This method involves the modelling of ceiling and wall decoration free hand in situ. The enrichments were gradually built up, first cored out in a mixture of coarse sand and lime. Over this was applied the stucco mixture (lime putty and marble dust) which was then shaped into the desired detail with modelling tools. For really high relief, armatures of wood laths and wire were embedded for support and strength.

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Excellent examples of this stucco work survive in the baroque and rococo ceilings dating from the early and mid 18th century. It encompasses a wide repertoire of figurative and abstract details, featuring acanthus leaves, scrolls, human figures, birds, fruit, flowers, garlands and festoons. This method allowed for a deep undercut of detail, and for a free flowing and naturalistic three dimensional form.

Casting

An alternative to modelling and carving in situ was the practice of taking a mould from an original model in clay, into which plaster of Paris was then poured. When the cast was set, the mould was removed. This mould could be used again for the mass production of repetitive ornaments.

Moulds during this period were made from plaster and being rigid would only allow for ornaments in low relief to be cast. These casts would then be carved to bring out the undercut. As the details were shallow and in low relief, the compositions would appear elegant and refined; the inspiration was the neo-classicism of Robert Adam. A typical neo-classical scheme would consist of urns, sphinx, griffins, anthemion and corn husks, with plaques and panels depicting allegorical scenes from classical antiquity.

By the 1850s, the use of gelatine moulds was introduced. This was a great advance as, being pliable, it allowed the reproduction of detail in higher relief thus eliminating the

need to carve the undercut. This new concept brought about rococo and baroque revivalist styles, although elaborate details were confined mainly to public buildings. On the domestic scene details were more standardised.

Running in situ

Virtually all plain face cornices, rib mouldings on ceilings, and panel mouldings were run in situ, employing a method that has remained unchanged throughout the centuries. Larger moulds, such as, cornices, had their profiles built up in separate stages. Fixed onto the wall beneath the cornice was a wooden batten called a running rule which was used to steady the running mould or template. This consisted of sheet metal, made in the final profile shape of the cornice, and it was run back and forth over the whole length of the cornice.

Early 20th century to present

From the early 20th century, the use of decorative plasterwork gradually fell from favour resulting in a steady decline in the quantity and quality of plasterwork being produced. Even so, up until quite recently, the traditional skills of running cornices, and making and using moulds were still part of the training for those apprenticed to the plastering trade. These skills still survive but only because of the needs of restoration projects, and such work is only undertaken by private individuals, conservation bodies or under the auspices of the Office of Public Works.

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Since the early 1980s, there has been a steady and growing demand for decorative plasterwork in the domestic market. This has resulted in the establishment of many firms mass producing cornices and centrepieces. While this has promoted awareness, it has done little to revive the genuine art form of stucco work, as the off-the-peg prefabricated mouldings are geared towards the commercial market.

This type of work is completely inappropriate as a replacement or substitute for existing antique plasterwork in a period building.

Very often, what is termed as 'Georgian' tends to be a hotchpotch of styles. On close inspection, the enrichments are generally crude, lifeless and indistinct, lacking essential crispness and three dimensionality. Unfortunately, some Georgian houses in Dublin have had their original plasterwork replaced with these artificial mouldings. The effect looks meaningless and sterile, taking no account of the form, function, character or period of the building.

Common Problems and Solutions

The majority of period buildings contain a certain amount of plasterwork, ranging from simple plain cornices to elaborately decorated ceilings, cornices and friezes. The condition and state of preservation depends on whether the building has been well cared for, or totally neglected by its previous owners. A new owner can be confronted

with a wide variety of problems which may demand several methods of plasterwork conservation and restoration. The owner should seek professional advice but will find it useful to have an understanding of the problems, and the possible work involved in the conservation/restoration process.

1. Overpainting

Once a decorative scheme for a room was completed, it usually received several coats of paint. Over time paint tends to discolour, more rapidly in urban areas. This results in the need for frequent repainting. Eventually, the fine detail of enrichments is obliterated under layers and layers of paint. This is a very common problem and many owners do not realise just how crisp and beautiful the plasterwork remains under its many coats of paint. The paint used included oil, made up of a mixture of linseed oil, lead pigment and turpentine, or distemper made up with animal glue, size, lime and whiting bound together with water. Modern paint used includes gloss and emulsion paints.

To expose the plasterwork detail once again, it is necessary to remove the paint. The method most employed today is to use an alkali based paint remover, which will remove multiple layers of old and modern paint in one go without causing any damage to the plasterwork surface. It is supplied in paste form and is applied directly onto the surface of the paint with a trowel, paint brush or by spraying. A plastic backed paper is applied and after the required period, the cover is removed, taking with it much of the dissolved

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paint. This method is recommended when the constituents of the underlying layers are known. It should be used with great care where there is any doubt as to what lies below, as with this poultice method one cannot see what is actually happening underneath, and damage may result.



Cleaned cornice on left contrasting with portion on right, which is obscured by layers of paint.

It will then be necessary to pick out the detail with a small tool. If there is any paint residue left, especially, if it is oil, it will be necessary to wash the surface down. This can lead to efflorescence of salts appearing on the plasterwork, this usually ceases once the plaster has dried out, and can then be brushed off. Once the plasterwork has been cleaned, it will be necessary to neutralise the stripped surface with an application of acetic acid (vinegar).

2. Sagging plasterwork

Old plasterwork was usually keyed to the lathwork as this secured the structure in situ. In the life time of a house, there is a certain degree of movement and settlement. However,

if the movement is severe the plasterwork will break from its key, and, therefore, will no longer have any support from the structure. Areas of the ceiling and cornice will loosen and sag out of position.

More serious is water saturation which can rot lath and timber joists, causing ceilings and cornices to subside. The plasterwork becomes sodden and starts to crumble and decay, eventually collapsing altogether.

A failed key in a decorative ceiling, which results in sags and bulges, should be refixed into position in order to save the ceiling. The first stage of this operation involves supporting the affected areas of the ceiling from below. Expanded polystyrene is needed to cushion the areas between the ceiling and supports.



Ceiling supported from below.

When this is done, rotted or defective timber joists can be removed and replaced with new ones. Working from below, the ceiling can be refixed or stitched back to the old and new joists, using a steel wire bedded into the

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plaster and threaded through the laths and tied around the joists. This should be done at intervals along all joists covering the affected area of the ceiling. Non-ferrous screws should be used and expanded metals are bedded into the ceiling securing laths to the joists. This work is then sealed and replastered.

Any cracks across the ceiling should be raked out and cut back, then sealed and filled in, in the same manner. The area between the joists above the ceiling should be cleaned of all loose debris, and when cleaned, the laths should be sealed with PVA (polyvinylacetate). A netting material is folded over and laid between each joist. These areas are then flooded with a creamy mixture of plaster of Paris, brushed in to fill any gap between the old plaster and laths.

3. Damaged or missing portions of cornices and enrichments

Other forms of destruction can result from crude and insensitive re-modelling of houses, where a partial or complete removal of all decorative plasterwork has taken place. Loss can also be the result of work necessary to save the structure of the building, and often occurs in areas over windows, doors and arches.

Most modern methods of the restoration of plasterwork involve the use of fibrous plaster, plaster of Paris or gypsum reinforced with mesh jute hessian or scrim and wooden laths.

Cornices

A running mould can be used to restore a missing section of cornice. To make a plain face mould, it is necessary to get an accurate tracing of the moulding. This can be done either by removing a section carefully or by making a saw cut across the profile, then taking a card and inserting it into the section and making a tracing. With this tracing a metal profile or template can be constructed. If the craftsman is particularly skilled, the template can be used to run the mould in situ. Alternatively, the mould can be run on a bench or cast from a reverse mould.

The same process is employed to make the reverse mould as the run mould, with the exception that the template is made in the reverse of the profile, and it is not necessary to use scrim or laths.



Reverse mould showing template and horse in position.

Enriched Work

In order to repair lost and destroyed sections of enrichments, it is necessary to remove any paint work from the undamaged sections so as to expose the detail. Once this is done, a

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mould can be taken in situ or made from a portion of the detail taken down and made on the bench.



Missing elements are easily copied and replaced

Types of mould

Hot melt polyvinyl chloride mould

Called vinamould, it is rubbery in texture and made up of vinyl resins specially manufactured for the making of pour moulds on a bench. In order to use vinamould, it must be cut into small chunks and melted. To avoid burning it must be constantly stirred, otherwise, when poured, the vinamould will be less pliable. Plaster enrichments are porous so they will need to be sealed with a few coats of shellac to prevent the plaster from absorbing the oil from the vinamould. It takes experience to become practised in the use of this material.

Squeeze moulds

Silicon rubber is a material used to take squeeze moulds of undamaged enrichments still in situ. The details are first sealed, then the silicon rubber is combined with a catalyst to start the setting process. Using one's

hands, the silicon is squeezed gently in and around the surface of the detail, pressing firmly into any undercuts.

Casting

Silicon and vinamoulds are soft so it is necessary to cast a fibrous plaster backing to support and maintain the shape of the mould. When this is done, casting can begin. A plaster mix is brushed into the mould making sure all the details are covered. Any trapped air bubbles can be released by gently tapping the mould and backing on the work bench. Scrim and laths are incorporated for strength. If the cast is thin and narrow, the laths should be left out as they will cause warping of the cast.

Fixing of running mould and enrichments in situ

Once the casting and running of moulds are completed, the details should be cleaned up and be fitted for size so that they match in with the original work. For cornices it is important to make sure that their ends are squared and any pieces for corners are mitred. It can also help to have the projection and depth of the cornice marked on the wall and ceiling.

For the fixing stage, the back of all casts and cornices should be scored in an X pattern, likewise the bedding areas that will receive the detail. The surface of the scored areas are coated with a diluted solution of PVA to prevent suction. Finally, the details are planted in situ using joint filler as an adhesive,

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squeezing the cast firmly into position and making sure that it is in line and flush with the existing work. Cornices can be secured in position with non-ferrous screws. For enriched cornices, their plain face is run or cast containing the beds for enrichment; this is then fixed in situ. The lines of cast enrichments are subsequently planted in the prepared beds.



The plain face cornice secured in position.



Completed cornice with enrichments bedded in situ.

Conclusion

The conservation and restoration of decorative plasterwork demands knowledge and skill, and the result, when properly executed, is extremely rewarding.

Do's and Don'ts

- Do*
- seek advice from an expert
 - keep accurate records of existing features for future reference, by photographs, measurements and drawings.
 - make sure samples are kept of any details which have to be removed and replaced.
- Don't*
- remove original details because they are old, or in the belief that they cannot be kept or repaired.
 - substitute original features with inappropriate commercially mass-produced plasterwork

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