ARTIFICIAL REALITIES: THE PRODUCTION OF THE COURTAULD

An inquiry into the
Production of the Courtauld by
Alan Chandler with Gilles Retsin
and Helen Howard

A Project curated by
Elvira Valdes
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East Wing Biennial

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Alan Chandler

Alan Chandler is a Specialist Conservation Architect with the London based practice Arts Lettres Techniques and a Reader in Architecture at the University of East London. Chandler's diverse experience ranges from material technology to theorizing the politics of conservation, informed by a background as a typographer, designer-maker, contractor, architect and writer.

Gilles Retsin

Belgian born architect Gilles Retsin worked in Germany and Switzerland and gained considerable experience with LAVA and as project architect with Christian Kerez. Retsin works as senior designer at Kokkugia and directs computational architecture at the University of East London. Retsin's computer coding explores the hidden structural details and materiality of buildings.

Helen Howard

Helen Howard is a Scientific Officer (Microscopist) at the National Gallery in London, an expert in non-invasive investigations of wall painting using optical coherence tomography and hyperspectral imaging.

CONTEXT

In the Manifesto for the Society for the Protection of Ancient Buildings, William Morris defined two acute observations on what he perceived to be a crisis of attitude towards the artefacts of built history. Two potential, and potentially conflicting, strategies for working with ancient buildings sit side-by-side within the Manifesto: to continue to develop buildings as living enclosures of human endeavour, or to maintain them as the artworks they are, and to house our endeavours in the new:

> *Strategy 1.*
> *The need for "protection in the place of restoration" and the folly of imitation. Put another way, the definition of repair means to do as little as is necessary, and when you do, it do it without pastiche.*

> *Strategy 2.*
> *History is a living process that registers its passing upon the built environment, and that process is a testament to a genuine art of the everyday without affectation and artifice.*

These ideas are complementary, but in essence offer very different conclusions.

When committed only to repair we now provide, and are responsible for, only the context of the historic building, which through its protection and preservation from wear and weather is an artefact for future study. We have a curatorial role in our historic environment, and can read its accumulated history of use up until the point at which we may only repair.

The implication of this idea is that the history that shaped the building as artefact is now over, engagement other than its conservation is withdrawn – "to resist all tampering with either the fabric or ornament of the building as it stands; if it has become inconvenient for its present use, to raise another building rather than alter or enlarge the old one".

Morris's reasoning is clear; he was faced, as we are, with a situation where contemporary intervention is overwhelming the "bygone art" of architecture with its language, its demands and its materiality, and is destroying the readability of historical continuity. From appearance to chemistry, contemporary building can be considered incompatible with ancient fabric, so from this point onwards we should interpret, but we should not elaborate. The conclusion is that the "curatorial" role is intellectually active

but physically passive, implying that history becomes considered as academic rather than actively produced.

This aspect of the Manifesto is defensive – better to withdraw from interference than ruin through ignorance, and is borne of Morris's conviction that the connection between an industrialised and pre-industrialised society is broken. However, as is clear when considering Morris's second strategy, this is not where his ambition lies. The notion of a curatorial future runs counter to Morris's own idea of history as an unfolding process of creative change, and against his own experience of craft as a constant activity of making. This is encapsulated within his own counter argument –

> *"A church of the 11th century might be added or altered in the 12th, 13th, 14th, 15th, 16th, or even the 17th or 18th centuries; but every change, whatever history it destroyed, left history in the gap, and was alive with the spirit of the deeds done midst its fashioning. The result of all this was often a building in which the many changes, though harsh and visible enough, were, by their very contrast, interesting and instructive and could by no possibility mislead."*

Architecture is a celebration of change over time, of legibility without artifice. Both building and dwelling are an invitation to adapt sympathetically to the needs of the time, "of necessity wrought in the unmistakable fashion of the time". The real issue is defining how change is wrought so that it is "alive with the spirit of the deeds done midst its' fashioning". How can architectural judgements be attuned to the balance between the endeavour to be housed, and the house itself such that the essential nature of the activity is expressed yet maintains and enhances the presence of the house through the very act of alteration.

The installation at the Courtauld draws on Morris's call for readability, for recognition of the continuity of inhabitation that our historic buildings can register, and makes manifest the value of conservation research in opening up our appreciation of sympathetic (and even on occasion unsympathetic) use which contributes to a building as enclosure of the everyday. This emphasis on the everyday is an active tactic for resisting museumification – even within a museum itself.

Jacques Lacan once said that truth has the structure of a fiction. The projects discuss two forms of reality: 'the constructed and the revealed'. Both give a new shape to the reality we call 'everyday', revealing the legacy of inhabitation through the physical depth of the surfaces that defines the spaces of the Courtauld itself, and through reconstructing the shape of the space itself. The installation oscillates between the scientific reality of Howard's painstaking conservation based stratigraphy and a fictionalized re-presentation of that knowledge through the use of historic colour windows placed at key locations within the East Wing.

The actual layering of the decoration within each space is both real and speculative – the distinction between the two often blurred, so that the viewer is given insights into the life of the spaces they use

The artworks are derived from eight categories based on particular investigations of the Fine Rooms of Somerset House occupied by the Antique Academy since a Deed of Transfer in February 1781. To structure the colour windows throughout the East wing, the palettes and number of strata Howard identified in eight distinct locations within the Fine Rooms provides the criteria for seven of the eight pieces: Ceiling, Moulding, Cornice, Coving, Wall, Dado, Door and architrave.

Supplementing this criteria are actual excavations that in one of the locations provides an actual description of the colour layers. This fusion of actual and speculative responds to 'Artificial Realities', giving both real and fictionalized access to two centuries of inhabitation.

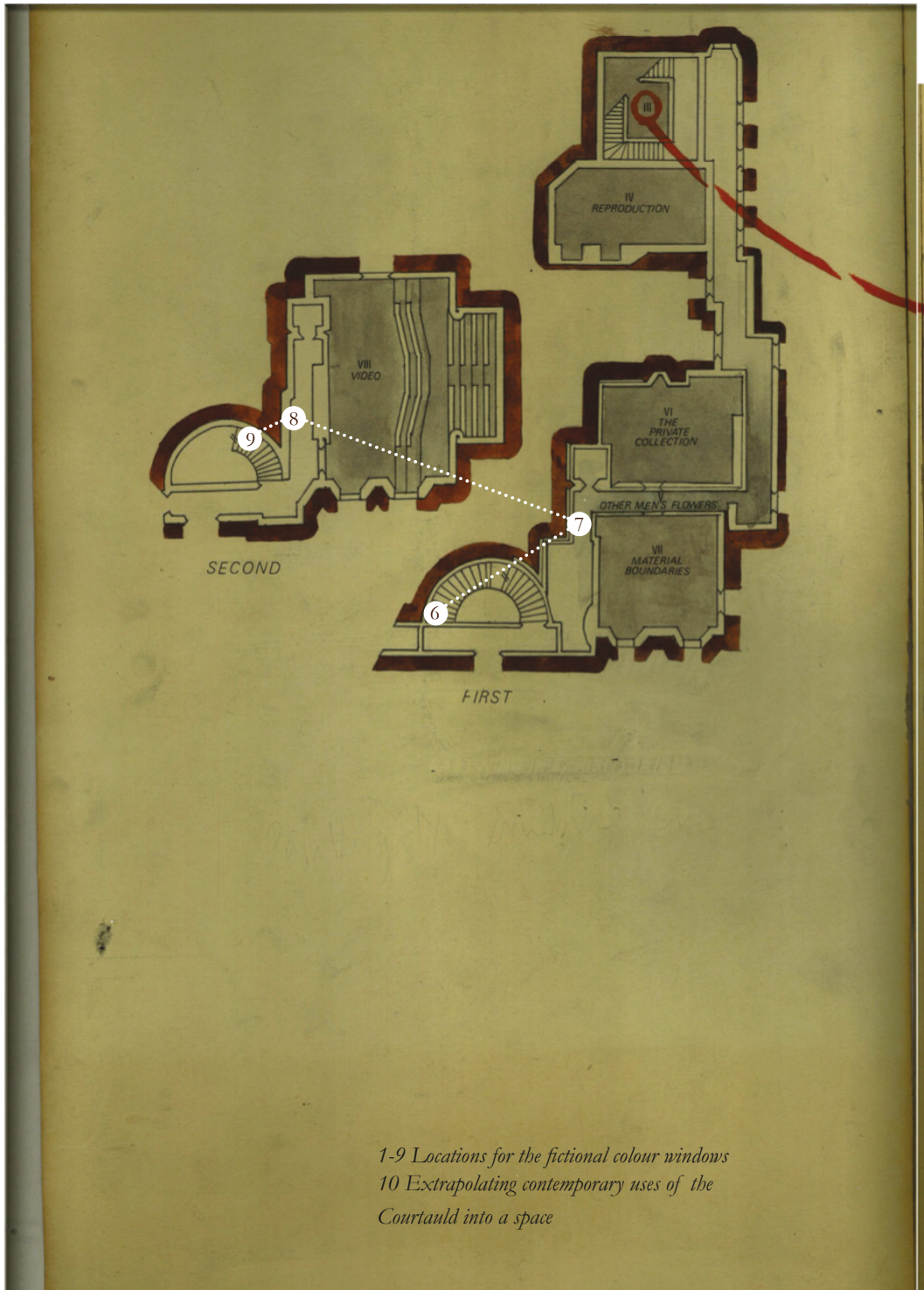
Within the café the inhabitation timeline is condensed, but the layers of occupation are still evident and provide the basis for a parametric exercise. The walls of Chambers building have received fixings to hold artworks from successive Biennials – holes and plugs litter the Georgian masonry and their mapping and re-use provides the framework for a spatial study that organizes a network of threads to connect these scars together to give a contemporary expression of these accumulated experiences.

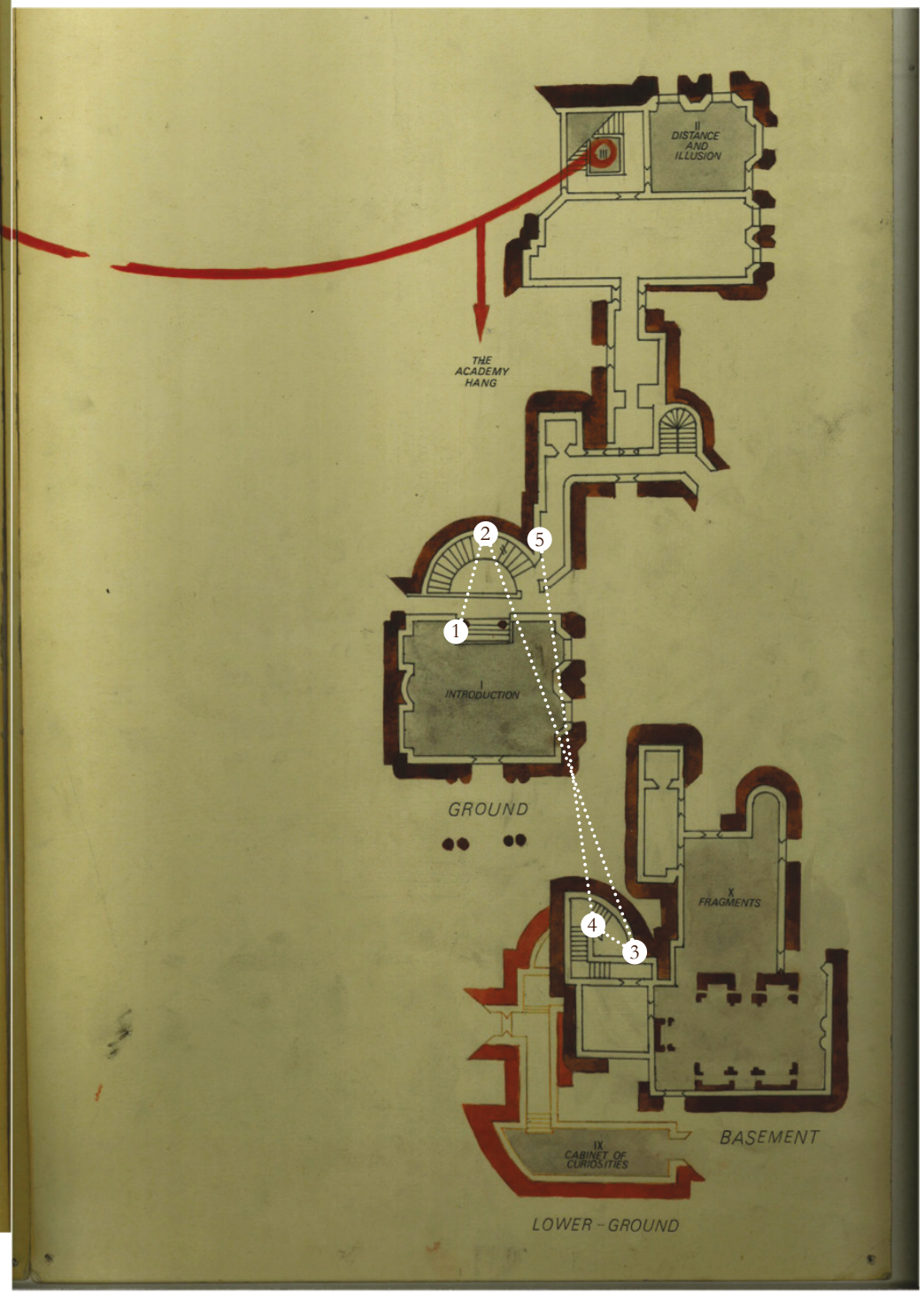
Within this network organized by the past, new, digitally generated pieces allow the threads to be diverted and the formal connections between the scars to be manipulated willfully. The past is an often un-registered contributor to our present – this exercise in space shaping deals directly with this confrontation.

Joshua Compston understood the social and artistic role of the Courtauld Building not as a fixed monument but a dynamic process of renewal and social interaction. Through science and fiction, the daily renewal of the Courtauld is both defined and alluded to.

The Production of the Courtauld shows this fine building for what is - a social structure as much as a museum piece. Through the tools of fabric conservation the significance of people is revealed and discussed, and the reduction of our historic buildings to spectacle can be confronted and refuted.

LOCATIONS





1-9 Locations for the fictional colour windows
10 Extrapolating contemporary uses of the Courtauld into a space

SPECIFICATION

The following categories of colouring are derived from the specific analysis of the Fine Rooms undertaken by Helen Howard. Each category corresponds to a typical element of the interior – WALL, DADO etc., and provides the structure for a fictional revelation of the historic identity of the Courtauld spaces. Although the windows are fictional, the presence of these colours below the surface is actual, creating an ambiguity in alignment with the Biennial theme.

The final category - STAIR - is not derived from Howard's work, but is real - contemporary damage revealing through accident what Howard reveals through painstaking micro-excavation. The installation is achieved using Little Greene paints, close colour matching the originals.

category	*site*	*phases*	*colour spectrum*
Dado	1	16 phases	original: Pale grey Cream/white x11 Dark brown Yellow Pale green Current colour
Architrave	2	14 phases	original: Pale grey Grey Cream x10 White Current colour
Ceiling	3	16 phases	original: Pale blue-green Dark green Cream/white x13 Current colour
Wall	2,4,6,7	17 phases	original: Warm mid green Green Cream White Cream Yellow
Stair	5	19 phases	original: Dark grey Beige Stone Pale green Pea green Beige Dark buff Pale green Beige Stone/beige x3 Dark brown Sky blue Dark grey Black White x2 Current colour
Coving	6	14 phases	original: Pea green Dark green White Cream/white Pale green Current colour
Mouldings	6	14 phases	original: Cream/white Dark Beige Cream/white x11 Current colour
Cornice	8	10 phases	original: Stone Cream/white x9 Current colour
Door	9	16 phases	original: Beige Dark green Cream x11 Pale beige Current colour

ANALYSIS ONE: STRATIGRAPHY

Helen Howard's 48 pages facsimile
(reproduced from scans of the original.)

CONSERVATION OF WALL PAINTING DEPARTMENT
COURTAULD INSTITUTE OF ART

Somerset House, The Royal Academy Antique Academy: Scientific examination of the original decoration

HELEN HOWARD
June 1997

1 Summary

Since 1990 the Courtauld Gallery has occupied the Fine Rooms in the Strand block of Somerset House, where elaborate plasterwork and subtle colouring were an integral part of the 'splendour and order' of Chambers' original design. Therefore, as part of a programme of environmental improvements and refurbishment of the Gallery to be undertaken in 1997-98, consideration is being given to retrieving both the original crispness and detail of the plasterwork and the colours which set it off. In connection with this, a preliminary investigation was undertaken to determine the nature and condition of the original decorative painting scheme in the Antique Academy (Gallery 1), as well as the type and extent of subsequent overpainting and the potential for its partial removal.

The investigation comprised historical research, sampling and scientific analysis, and cleaning trials. Given the considerable documentary and pictorial evidence which survives, the first stage was to assemble this material. The sources included pen and wash drawings by Chambers, the building accounts, and the Deed of Transfer, as well as a contemporary drawing and a slightly later painting of the room. These were extremely useful in informing the sampling strategy, which was designed both to assess this evidence and to define the type and distribution of the original colouring. On the basis of the results of the analysis, trials of various materials and methods for selective removal of overpaints from the decorative plasterwork were undertaken.

Analysis showed that the composition of the plaster varies from area to area, and that the elaborate mouldings are composed of two types of plaster; both contain lime (calcium carbonate) and oil, and one contains gypsum (calcium sulphate). An oil sealant (combined with chalk and lead white) is clearly visible in several samples. Chambers employed a limited range of muted colours. Creamy white and a beige or 'stone' colour predominate on the mouldings and architectural details. Other colours include: pale 'flesh' pink and pale green (ceiling); 'pea' green (coving); warm mid-green (walls); and pale grey (dado). A distinct oily dirt layer marks the division between the original decoration and the numerous—typically 15—phases of later redecoration. These are mostly white, creamy yellow or pale green, and culminate in the stark white of the present phase. Significantly, however, the first scheme of repainting repeats the overall decorative scheme, though with a darker and richer version of the original colours.

In comparing the results of the scientific examination with the documentary evidence, it is clear that Burney's coloured drawing of *c.*1785 provides an accurate rendition of the scheme, while the building accounts differ only in the designation of laylock (lilac) rather than pink. By contrast, the Zoffany painting must represent the room in the darkened version of its first redecoration, perhaps in the 1790s. The subtle shadowing enhancing the relief of the plaster mouldings is characteristic of a number of Chambers' pen and wash drawings.

Trials undertaken to remove the overpaints partially and selectively were generally unsuccessful, or very time-consuming. The constituents of the plaster mouldings are highly susceptible to damage from the conservation materials available, while the variation in the thickness and solubility of the overpaints makes control of their removal extremely difficult.

Finally, the subtlety of the pigmentation of the original paint layers should be noted. Delicate hues were produced with remarkably few pigment particles, producing a highly desirable softness and variation across the surface.

2 Introduction

The interior decoration of the Fine Rooms has been seriously compromised by the concealment of the original polychromy beneath subsequent phases of decoration. Dr Ian Bristow's 1988 investigation of Chambers' decorative scheme, including both documentary research and paint analysis, did much to elucidate its nature and quality.[1] His study focused on the Royal Society Meeting Room (Gallery 5) and resulted in a recreation of that decoration for the newly installed Courtauld Gallery in 1990. In relation to the Gallery's 1997-98 programme of major refurbishment and improvement of the environmental conditions, consideration is being given to the potential for recovering or recreating the colour of the original decoration, and to the liberation of the finely modelled plasterwork from the numerous layers of overpaint that clog its fine detail. Therefore an investigation to determine the nature and condition of original paint in rooms not studied by Bristow, and the potential for partial and selective removal of the numerous overpaints has been initiated.

As a preliminary phase in this investigation, it was decided to undertake analysis of the Royal Academy Antique Academy (Gallery 1), which has the particular advantage of having been recorded pictorially in the 18th century. It was recognised that the investigation has four distinct—but closely related and sequential—components: documentary research; sampling and scientific analysis; uncovering trials; and interpretation and specification for redecoration. The initial documentary research and transcription of the relevant building accounts was undertaken by the architect, Nigel Sunter. Sampling, scientific examination, and coordination of the cleaning trials was carried out by Helen Howard of the Institute's Conservation of Wall Painting Department, while the trials of various cleaning materials and methods was undertaken by John Burbidge. Interpretation of the evidence and specification for the redecoration of the Fine Rooms is the responsibility of the Gallery's consultant, Alec Cobbe.

This report presents the results of the technical examination and the cleaning trials within the context of both the documentary materials for Somerset House and the recent research undertaken by specialists in this field, in particular Dr Bristow and Helen Hughes of English Heritage. In the event, the documentary material was far more considerable than anticipated, including original drawings by Chambers and Deed of Transfer to the learned societies, and merits further study. Moreover, it is clear that the roles of technical examination and historical research are complementary, and each is required to inform the interpretation of the other.

3 Selected history of the Antique Academy

1775	William Chambers appointed architect of Somerset House on the death of Robinson.[2]
1778-80	Strand block of Somerset House decorated to receive the Royal Academy of Arts, the Society of Antiquaries and the Royal Society.
15.2.1781	Deed of Transfer of completed rooms at Somerset House to learned societies.

[1] Bristow 1988.

[2] For further details on this and other aspects of the building, see Newman 1990.

*c.*1785	Burney tinted drawing of the Antique Academy.
*c.*1790	Zoffany painting of the Antique Academy.
1837	Royal Academy removes to Burlington House.
1870s	Royal Society and Society of Antiquaries remove to Burlington House.
1870s-*c.*1970	Registrar/General engages rooms formerly occupied by the Royal Academy, the Society of Antiquaries and the Royal Society.
*c.*1970-90	Premises empty.
1988	Dr Ian Bristow undertakes a detailed investigation—including examination of documentary sources and analysis of paint samples—of the original decorative scheme in the Royal Society Meeting Room. In addition, limited sampling of the Antique Academy, other Fine Rooms, and the west staircase was carried out.
1990	Fine Rooms of the Strand block of Somerset House are refurbished, including repainting, for the Courtauld Gallery, and reopen in 1990.
1997	Courtauld Gallery secures a National Lottery grant to refurbish the interiors.

4 Methodology of the present investigation

The area examined in detail and sampled was limited to the zone accessible from a small tower scaffold, positioned in the south-west corner of the gallery. This provided access to representative areas of all types of moulding and flat zones which may have been coloured (Appendix I). Following a detailed inspection of this portion of the decoration in normal incident and raking light, samples were taken to determine the nature of the original plaster support, the original colours, the stratigraphy of their application, and the approximate number of subsequent phases of decoration.[3]

A portion of each of the paint samples was mounted as a polished cross-section (in polyester embedding resin), and was examined with an optical microscope at 170-2500x magnification in normal incident and UV light; photomicrographs were taken at between 500 and 2500x. Microchemical tests were undertaken to identify some metallic ions (Pb^{2+}) and functional groups (SO_4^{2-}), and histochemical tests were undertaken to indicate the presence of oils and proteins.[4] Identification of organic materials and additional confirmation of inorganic components were undertaken using Fourier Transform Infra-red (FTIR) microspectroscopy.[5]

[3] The doors and skirting boards were not sampled. In the Royal Society Meeting Room, Bristow (1996a:2) found that all areas of skirting sampled were not original.

[4] The microchemical tests included: hydrochloric acid and potassium iodide, which produce a yellow stain for lead; lead nitrate and sodium rhodizonate, which produce a purple colour in the presence of sulphate ions; and hydrochloric acid, which results in the evolution of carbon dioxide, to identify carbonates. Preliminary staining for oil was undertaken using Sudan Black B which produces a blue colour when indicating a positive result. In UV light, proteins give a yellow fluorescence when stained with fluorescein isothiocyanate (FITC). Acid fuchsin was also used for the identification of protein.

[5] All FTIR microspectroscopy was carried out by the author at Imperial College.

The stratigraphic information obtained from the paint cross-sections was used to facilitate small *in situ* uncovering tests in appropriate and discrete places which aimed to provide further information on the appearance and present condition of the original colours of the walls and ceiling. The thick upper layers were successively removed (Plates 3 & 7), however, while working from a scaffold without the aid of magnification, it was not possible to remove the very thin layers (5-20 µm thick) immediately above the original. Therefore a portion of the samples (approximately 1 cm^2) taken from flat zones of the ceiling and walls was retained to execute careful uncovering in the laboratory with the aid of a binocular microscope (10-45x magnification). This painstaking work resulted in the successful uncovering of small zones of original paint from a number of areas (Plates 4, 5, 11, 19 & 25b). These small fragments are available in the Department of Wall Painting Conservation laboratory for examination of the original and later paint layers which remain on them.

Investigation of partial reduction of overpaint

In addition to the examination and analysis of the original decorative scheme, an investigation of the possibility and methodology for partial and selective reduction of overpaint—without disturbing the original layers—was undertaken in collaboration with the conservator John Burbidge. This work was informed by the stratigraphic information from the paint cross-sections and involved the testing of various materials and application methods to determine a methodology for controlled partial removal of the overpaint.

5 *The documentary evidence*

The documentary evidence is of two types. The primary sources include drawings by Chambers for the decoration of the rooms, as well as building accounts with payments that typically specify colours, and the Deed of Transfer which records the decoration of the rooms when handed over to the learned societies. The secondary sources include important early pictorial records of the room.

Primary sources

William Chambers' original architectural drawings for Somerset House—now housed in Sir John Soane's Museum and the Victoria & Albert Museum—include a number of the Antique Academy, and provide evidence relating to his intentions for the appearance of the decorative scheme.[6] Although the complex structure of the mouldings is thrown into shallow relief by tonal shadowing executed in wash,[7] colour is not a feature of the Somerset House drawings. However, Chambers' subtle use of muted colours is evident in other of his drawings of the period, such as the facade of Melbourne House, where delicate mid-blues are juxtaposed with warm stone colours washed with warm brown to indicate weathering.[8]

6 Some 800 drawings for Somerset House survive. For those in Sir John Soane's Museum, see cat. nos: 42/7/13; 42/5/102; 42/5/116; 42/4/49; 42/3/27; 42/3/34; 42/7/2. For the drawings in the Vistoria & Albert Museum see, Snodin 1996b: cat. nos. 677-717.

7 This type of tonal shadowing is employed to particular advantage in drawings: Sir John Soane's Museum cat. nos. 42/3/27 42/5/102 & 42/4/49. For a brief discussion of Chambers' use of colour, see Snodin 1996:148.

Chamber's drawing for the chimney wall of the great drawing room of Gower House is unusual in the use of colour notations to modify the proposed hue— lilac is to replace pink—employed to set off the plaster ornament.

In addition, contemporary building accounts provide a detailed record, not only of payments to particular artists for specific items, but also of payments for the application of particular colours to lengths of mouldings and ornaments. Thus for the cornice and ceiling of the Antique Academy the following are itemised:[9]

Building Accounts for the Construction of Somerset House:
cornice and ceiling to the Antique Academy

ft. ins	*item*	@	£
172.4	Sup. Of very rich Ionic modillion cornice 4 members enriched; front of modillion fluted and a patera on the soffit 5 times painted dead white.	5d	3.11.9½
291.5	Ground of ceiling painted 5 times, finish Laylock and Green.	3d	3.12.10¼
201.2	Sup. of painting 5 times done dead white to mouldings of ceiling.	2½ d	2.1.10 ¾
280.5	Of Ornaments, 4 times done, common.	3d	3.10.1¼
18.9	Of D°, the ground 7 times done and picked out in Laylock and Green.	6d	.9.4. ½

However, it is the Deed of Transfer of completed rooms to the societies which provides perhaps the most detailed information concerning the original decorative schemes, fittings and furnishings.[10] Thus, the Deed of Transfer—counter-signed by Chambers—of rooms for the Royal Society and Society of Antiquaries indicates the colours employed for each room, from the basement to garret level.[11] It records, for example, that the entire hall was painted in a stone colour with the doors grained mahogany, [12] and includes a particularly detailed account of the Fine Rooms. For the Royal Society Meeting Room, the deed documents that '...the ceiling is party coloured green, pink and light purple and white, all in oils. The rooms fitted up with mahogany tables and seats covered in black leather'.[13] There is also evidence that wallpaper was employed in the original decoration. A small fragment,

8 Sir John Soane's Museum cat. no. 43/7/20 (*c.*1771). I am grateful to Stephen Astley for drawing this work to my attention.

9 RIBA CHA 3/1 1780:250. I am grateful to Mr. N. Sunter of Purcell Miller Tritton & Partners for providing extracts transcribed from Volume 1 of the original building accounts for Somerset House. RIBA MSS. CHA 3/1, 3/2, 3/3 contain accounts for Somerset House, 1776-95.

10 The Deed of Transfer of the completed rooms handed over to the Royal Society and the Society of Antiquaries, dated 15 February 1781, is held by the Society of Antiquaries (MS 760, press mark: 189g). Despite the obvious importance of this document, the only reference to it is by Bristow, in his magesterial study of the decorative painting of the period (Bristow 1996a:167). A brief examination of the Deed indicates that considerable further consultation is highly desirable.

11 In the basement the wood and ironwork was painted in oil, stone colour and chocolate (MS 760: 11/16).

12 MS 760: 9/12.

13 MS 760: 7.

described as pea-green with a darker green pattern of eight-petalled rosettes is recorded, though it is not clear where it had been applied.[14]

For the present investigation of the Antique Academy, obviously it is the Deed of Transfer for the Royal Academy which would be relevant. Unfortunately, the Academy has no record of a deed of transfer, and further investigation of its possible survival elsewhere should be undertaken.[15]

Secondary Sources

Contemporary paintings and drawings of the *Antique Academy* also provide significant information regarding the way in which Chambers' environment was represented by his peers.

Perhaps the most renowned representation is that traditionally attributed to Johan Zoffany—though considered by some to be School of Zoffany— *The Antique School of the Royal Academy at New Somerset House* (Plate 2).[16] This atmospheric evocation of academicians studying antique casts, dramatically lit by oil-lamps with large triple reflectors, has been dated to *c.*1780-83 on the basis of the identification of Professor George M. Moser, first Keeper of the Academy (d.1783).[17] However Moser's identification is purely speculative, and since his portrait may have been incorporated into a composition posthumously, a *terminus ante quem* of 1783 for the painting is not secure.

Detailed inspection of the recently conserved painting indicates that the blue/green walls are contrasted with a paler yellow/green (pea green) coving. It is also apparent that the dado is pale grey in colour and that the mouldings are generally white. Of particular interest however is the ceiling decoration which is picked out in zones of blood red and blue/green (Plate 2).[18]

The intense colour and atmosphere of this painting contrasts sharply with a tinted pen drawing of the *Antique Academy* viewed from the opposite (east) end, done by Burney *c.*1785 (Plate 1).[19] Close examination of this drawing confirms that the plaster mouldings are white, and although the position of contrasting zones of green and red on the ceiling are the same as in the Zoffany, the area of blood red is pale pink in the Burney, and the varying

[14] The Building Accounts for Somerset House list several Paper hangers among those employed: Bowers & Co., Robert Stark, Joseph Trollope and Johnston & Young. See RIBA MSS. CHA 3.4.33.

[15] No evidence of this deed was found as a result of a search at the National Registry of Archives, although it is important to note that the Deed of Transfer of rooms to the Society of Antiquaries and the Royal Society was not listed there either.

[16] Royal Academy of Arts, oil on canvas 109.2 x 165.1 cm. See also Bignamini & Postle 1991:43.

[17] Manners & Williamson (1920:33-34) speculatively identified Moser, Keeper to the Academy.

[18] I am grateful to Nicola Colinsky of the Royal Academy for arranging for me to view the Zoffany.

[19] Edward Francesco Burney, *The Antique Room, New Somerset House,* pen drawing with coloured wash undertaken in *c.*1780, Royal Academy, Cab. A/Box 35. A companion piece, *The Antique School at Old Somerset House*, also in pen with coloured wash, was painted in 1779; see Bignamini & Postle 1991:63, fig. 3.

greens are a single blue/green.[20] From this perspective, it is also apparent that the interior of the niches are a pale neutral colour.

☙ 6 Results: The original decorative scheme (Tables 1-IV)

6.1 Support

Walls and coving

From an examination of polished cross-sections, it was visually estimated that the lime binder of the plaster support was combined with an inert aggregate—principally silica—in a ratio of approximately 1:2. The surface has been well smoothed, and Sample 32 (taken from the wall above the south-west niche) clearly demonstrates the way in which the aggregate particles are neatly aligned beneath the surface (Plate 4). In order to achieve an equally smooth surface for the curved profile of the coving, an additional fine lime-based layer with little or no aggregate has been applied in a layer approximately 650 μm over the coarse plaster layer (Sample 9, Plate 8).

Ceiling

The ceiling was also prepared with a lime-based plaster in preparation for the application of the moulded plaster decoration. Cross-sections of samples taken from flat areas of the ceiling (Samples 18-21, 28 & 29) show only the fine uppermost plaster layer which consists of lime with a little inert charge (Plate 20-22, 25a, 26 & 27), however a coarse plaster layer, similar in appearance to that employed for the walls, is clearly present *in situ*.

Mouldings (ceiling and cornice)

Analysis has indicated that the cornice and the elaborate mouldings on the ceiling are fabricated from two types of plaster. The main structure is a white, lime-based plaster ($CaC0_3$) with an inert charge and an oil component (Plate 28), while the fine decorative detail has a beige-coloured plaster consisting of calcium sulphate ($CaS0_4$) combined with calcium carbonate ($CaC0_3$) and oil (Plates 34-41).

Dado and mouldings on architrave of south-west door.

The support of the dado zone and of the mouldings over the south-west door is wood, as shown in Sample 47 (Plate 17).

6.2 Preparatory techniques

Porous materials such as plaster are commonly sealed to reduce the absorption of binding media from the ground and paint layers. Both oil and size-based primers were employed in the late 18th century, and contemporary accounts frequently detail both the type and the number of layers to be applied, for example, *'twice in oil'*, refers to two layers of an oil primer,

[20] I am grateful to Mr. N. Savage, curator of prints in the Royal Academy Library, for providing access to this drawing. His view is that the watercolour wash has not faded substantially.

while *'three times in oil and primed in size'*, indicates a size primer followed by three undercoats with an oil medium.[21]

In this case an oil-based sealant or primer was employed. Examination of a cross-section of Sample 21 (Plate 21) indicates the presence of a preparation consisting of chalk combined with oil applied over the plaster surface in a layer approximately 15 µm thick. Analysis of the equivalent layer in Sample 29 by FTIR microspectroscopy confirmed the presence of chalk with a little lead white—which would have functioned as a drier for the oil—in an oil medium.

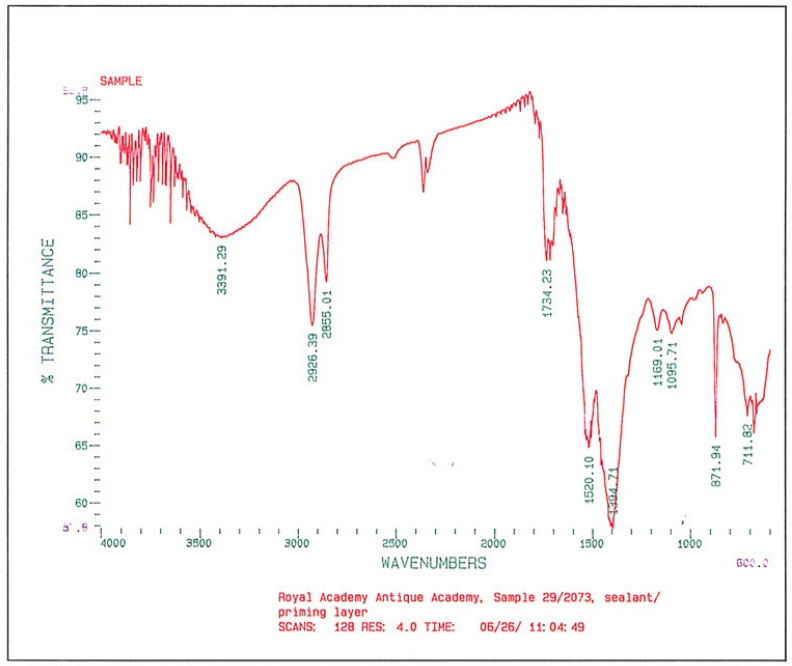


Fig. 1. The FTIR spectrum of the sealant (priming) from Sample 29 is typical of chalk and lead white in an oil medium. While the presence of chalk is indicated by the broad band around 1400 cm^{-1} *(CO_3) and peaks at 871* cm^{-1} *& 2519* cm^{-1}*, oil is suggested by the carbonyl band at 1734* cm^{-1} *and CH_2 stretches at 2926* cm^{-1} *and 2855* cm^{-1}*. The lead white also contributes to the broad band around 1400* cm^{-1} *(CO_3), and a confirmatory peak at 837* cm^{-1} *and 679* cm^{-1} *are also evident.*

A ground or undercoat of lead white combined with a little chalk and oil was applied—often in several layers—over the sealant providing a highly reflective and compact surface for the application of the final or *finishing* paint layers.[22] The FTIR spectrum from the white ground of Sample 29 (*Fig. 2*) is typical of lead white and chalk in an oil medium.

[21] For further details see Bristow 1996a:109.

[22] Bristow 1996a:109.

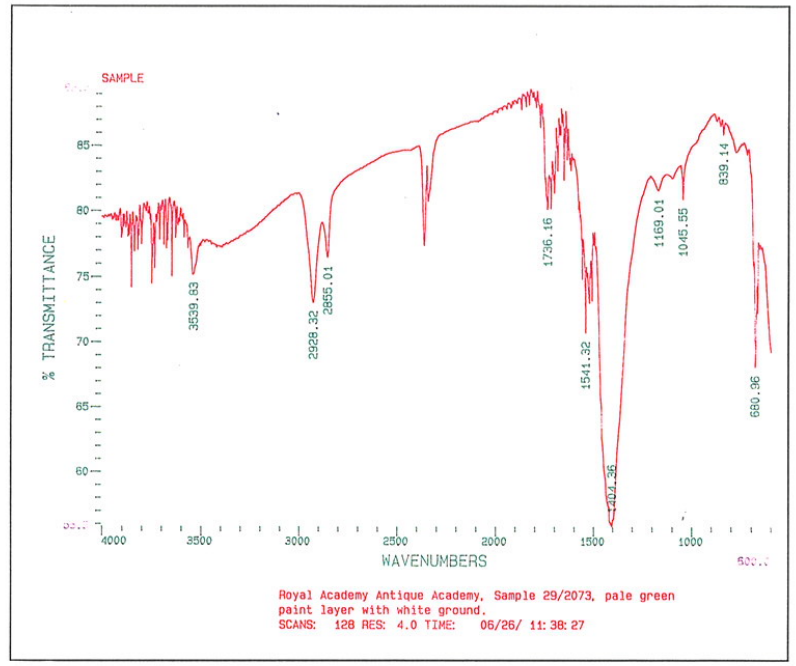


Fig. 2. The FTIR spectrum of the white ground from Sample 29 (with perhaps a little of the pale green paint layer, although there is no evidence of the green pigment in the spectrum) is typical of lead white in an oil medium with a small quantity of chalk. The presence of lead white is indicated by the broad band around 1400 cm^{-1} *(CO_3) and peaks at 3539* cm^{-1}*, 839* cm^{-1} *& 680* cm^{-1}*, oil is suggested by the carbonyl band at 1736* cm^{-1} *and CH_2 stretches at 2928* cm^{-1} *and 2855* cm^{-1}*. The effect of lead white on the drying of oil results in the characteristic features around 1540* cm^{-1} *and 1622* cm^{-1}*, and the slight change in position of the carbonyl band from the expected region of 1740-50* cm^{-1} *to 1736* cm^{-1}*.*

6.3 *The original scheme of decoration:*

Walls

The walls were originally painted a blue/green colour of mid tone (Sample 32, Plates 4 & 6).

Coving

A pale yellow/green colour was employed for the coving (Sample 9, Plates 8 & 11).[23]

Dado

The dado zone was painted a pale grey colour (Sample 46, Plate 14).

[23] Results of the investigation by Bristow also indicate the presence of greens of varying hues for the walls and coving: 'in the Antique Academy the wall samples taken revealed that the first decoration was carried out in green, but of a lighter and more yellowish tint than in the other rooms. The coving of the ceiling was finished in a much paler version of this colour. In the following scheme of decoration (also green) the tonal difference appears to have been reversed' (Bristow 1988:10).

Flat zones of ceiling

The central oval of the ceiling, triangular zones at the four corners of the oval and background to the monograms were picked out in a pale 'flesh' pink colour (Samples 19, 21, 28 & 29, Plates 19-22, 25a-27). The flat narrow borders around these zones, and square and rectangular insets at either end of the ceiling were contrasted in a blue/green (Samples 18 & 20, Plate 30).

It is also apparent that alterations to the overall design were made at an advanced stage of the painting process. Close examination of Sample 29 (Plates 26 & 27), taken from the background of the monogram inside the foliate wreath, indicates that this area was initially painted a pale green colour, but that this was swiftly changed to a pale pink to match that outside the wreath but inside the octagonal moulding (Sample 28). The zone outside the octagonal moulding remained a pale green colour (Sample 18).

Ceiling mouldings and cornice

Examination of the paint cross-sections clearly indicated the plaster mouldings are generally finished in a creamy white oil-based paint which has generally been applied in 2-3 layers of average total thickness approximately 80 μm (0.08 mm). It is important to note that the white is considerably warmer in hue than the modern emulsion with which the mouldings are currently painted—this distinction is clearly shown in a number of the cross-sections (Plates 34 & 36).

In a few distinct zones a slightly warmer colour—which may be termed 'beige' or perhaps 'stone' colour, since a very few yellow, red and black pigment particles have been incorporated within the white matrix—has been employed, presumably to throw some of the complex details of the moulding into shallow relief. This practice is evident in elements such as the egg & dart motif, where a stone coloured egg is juxtaposed with a creamy white dart. The stem of the uppermost foliate border, and the flat zone below the uppermost foliate border have also been picked out in 'stone' colour. Similarly, the octagonal moulding around the monogram in the south-west corner of the ceiling is painted in a similar warm 'stone' colour, and it is interesting to note that the building accounts detail a *common* colour which may include white, cream, stone, lead, pearl, and wainscot colour) for 'ornaments'.

Architrave of south-west door

The complex decorative motif on the architrave of the south-west door has also been enhanced by juxtaposing the creamy white raised motif (Sample 47, Plate 16) with a pale grey background (Sample 48, Plate 15). Subtle shadowing such as this—which would have enhanced the three dimensional structure of the complex mouldings—is frequently indicated in Chambers' architectural drawings,[24] and so it is significant that analysis has confirmed the use of the technique in the decorative scheme itself.

[24] See for example Bristow 1996b, Plate 1.

Niche

The interior of the niche (Sample 33, Plate 12) was painted a warm neutral colour—similar to the warm 'stone' colour employed for the shadowing of the cornice and details such as the octagonal moulding around the monogram on the ceiling.

7 *Results: Later phases of decoration*

The upper surface of the original scheme is clearly defined by a distinct dirt layer. This dirt layer is dark and oily in nature, presumably due to the numerous oil lamps which were originally employed to illuminate the casts (Plate 1). Analysis of this deposit by FTIR confirmed the presence of oil.

Close scrutiny of the cross-sections suggests that the first phase of redecoration repeats the overall decorative scheme although with a darker and richer rendition of the original colours. Coarser pigment particles have also been employed in the first redecoration. This is particularly clear in Sample 28 (Plate 25a), where a clear dirt layer can be seen over the original pink, and then coarser darker red particles beneath a second oily dirt layer. This oily accretion is even thicker than the first deposit, suggesting that the second decorative scheme was visible for even longer than the original. Sample 32 (Plate 4), taken from the walls also confirms a repetition of the green coloration, although a grey underpaint and a darker green hue has been selected for the first phase of redecoration.

Bristow also detected a repetition of the original scheme in the first phase of redecoration in Royal Society Meeting Room

> ...[the second phase] repeated the green finish using a slightly more yellow coloured paint containing many coarse particles of bright bluish-green painting, yellow and some black.[25]

The majority of the subsequent 15 or so phases of redecoration have been carried out in pale beige, creamy white, or pale green, although there is one particularly dark layer which is likely to represent an early 19th-century scheme (see especially Sample 46, Plate 14).

It is perhaps important to note that the most recent modern white emulsion layer is as much as 10 times as thick as any of the other layers (Plate 41). The average thickness of other paint layers is approximately 50 μm (0.05 mm) while the most recent paint is very porous and has been applied in a layer up to 550 μm (0.55 mm) thick.

The walls and dado zone have a thick layer of modern lining paper on the surface, and central oval of the ceiling has recently been replastered. The earlier phases of decoration are protected beneath these materials.

8 *Discussion*

The primary sources, namely Chambers' architectural drawings, the building accounts and the Deed of Transfer of Somerset House, provide exceptionally detailed information regarding the original decorative scheme in the Royal Academy Antique Academy and the other Fine Rooms. Results of the scientific examination indicate that there is a close correlation between Chambers' intent, the descriptions in contemporary documents and

[25] Bristow 1988: 3.

what was actually applied to the architectural surfaces. However, it is also clear that careful interpretation of the information is essential to achieve an accurate picture of the original scheme of decoration.

For the ceiling of the Antique Academy, the ground is detailed in the building accounts as being finished in Laylock and Green. Unfortunately the type of green intended here is not specified, though for other portions of the building the accounts indicate: *olive green* (on stucco CHA 3/1, p. 247); *pea green* on the ceiling of the Royal Society Meeting Room (CHA 3/1, p. 255); and *green verditer* for the Royal Academy's Ante-room and Library (CHA 3/1 pp. 247-9, 251, 253).[26] Examination of paint samples from the ceiling confirms the presence of a pale green colour (Samples 18 & 20) which appears slightly more blue/green than that employed for the coving.

Bristow suggests that the colour Laylock indicates lilac on the basis that the Deed of Transfer describes as 'light purple' the portion of the ceiling of the Royal Society Meeting Room which the building accounts detail as being painted in laylock.[27] Samples 19, 21, 29, 29 and the uncovering test shown in Plate 19, however, indicate the presence of a pale, almost 'fleshy' pink colour, and it is clear from the samples that no blue pigment particles are present which would have produced a slightly purple colour.

It is also clear that all the evidence needs to be considered together to obtain an accurate impression of the original scheme. For example, *dead white* is specified in the building accounts for painting the cornice and ceiling mouldings, and, although the majority of samples taken from these areas do indicate that a creamy white oil-based paint was employed (Table II), it is no longer possible to assess the surface texture of this paint since it is covered with an oily dirt layer and subsequent decorative schemes. However, in the 18th century the term *dead white* indicated a matt finish which was achieved by a process called *flatting* whereby a paste of lead white was generally diluted with oil of turpentine rather than oil. This matt finish became standard for high-quality interior decoration in the second half of the 18th century.[28]

For ornaments of the cornice and ceiling the building accounts indicate that a *common* colour was employed. Since some of the samples from the mouldings suggest the presence of a beige or 'stone' colour it is interesting to note that *common colours* included white, cream, stone, lead, pearl, and wainscot colour.[29] In some places it appears that this type of 'stone' colour was used to enhance the relief of the geometric details on the complex mouldings, as in the egg & dart motif on the cornice where a stone-coloured egg is juxtaposed with a creamy white dart. This type of shadowing may be observed in Chambers'

[26] It is interesting to note that the green verditer employed for the cove of the Ante Room of the Royal Society of Antiquaries and Royal Society was described in the Deed of Transfer as *pea green.* Bristow (1996a:163-5.) suggested that the pigments in this case were likely to be Prussian Blue and Naples yellow combined in an oil medium.

[27] See, Deed of Transfer of Completed Rooms at Somerset House, London, to the Society, 15 February 1781, now in the Library of the Society of Antiquaries; R.I.B.A MSS CHA 3/1 p.255; and Bristow 1996a:167.

[28] For further details on this and other finishes see Bristow 1996a:102.

[29] *Common colours* were the cheapest range of paints; see Bristow 1996a:158 and *Builder's Price Book* 1787:134.

drawing of the cornice for the Antique Academy in which grey ink was employed to enhace the volume of the elements.[30]

The primary documentary evidence and results of the scientific examination provide sufficient information about the overall appearance of the scheme for us to determine the accuracy of the rendition in contemporary paintings of the room. It is evident that Burney's tinted drawing of the Antique Academy provides a good overall impression of the decoration—colours of the type described and identified have been employed for the correct zones, such as pale pink for the central oval of the ceiling, green for the coving and walls, white for the mouldings and so on.

The position of zones of colour are also correct in the Zoffany, but here the hues are much more intense and saturated, for example blood red replaces Burney's pink. Even allowing for the difference in medium—oil on canvas compared with watercolour wash on paper—it seems likely that Zoffany's depiction represents the first phase of redecoration in the Antique Academy where darker and more intense hues of the original colours were employed. This suggests that Zoffany's 'Antique School of the Royal Academy at New Somerset House' may have been painted later, perhaps in the 1790s.

It is also important to assess the results of this work in the context of results from the examination and sampling of other contemporary decorative schemes. Recent work by Hughes indicates for example that Adam's original scheme for the hall at Kenwood House (completed 1773) included two shades of brilliant blue for the skirting boards, intense purple for the ceiling and several shades of green.[31] The striking intensity of such colours was not however universally favoured, and it is clear that Chambers' work contrasts strongly with that of Adam, and is characterised by an emphasis on tone, employing only a muted range of colours.[32] This approach is typified by Chambers' use of shadowing to enhance the structural design of mouldings.

With respect to the plaster mouldings, it is important to summarise here the results of the investigation of the possibility and methodology for the partial and selective reduction of overpaint without disturbing the original layers.[33]

- The constituents of the plaster mouldings (calcium carbonate, calcium sulphate and oil) make them susceptible to damage following application of both solvent- and alkali-based paint strippers. Indeed, samples taken from the cornice following the partial removal of overpaint clearly demonstrate the extent of the softening and consequent contortion of the remaining paint layers (Plates 42 & 43). Both types of plaster substrate were considerably softened by the paint-strippers and could be 'cut like butter', rendering them dangerously prone to accidental damage or manipulation.
- There are approximately 15 phases of redecoration on the mouldings. The total amount of paint over the original layer varies in thickness from 0.45 mm - 1.5 mm. This disparity in the thickness of the overlying layers makes a uniform stripping action impossible.

[30] Sir John Soane's Museum cat. no. 42/5/102.

[31] Ricketts 1997:48.

[32] Snodin 1996:148.

[33] See also Burbidge 1997.

9 Acknowledgements

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10 References Cited

Bignamini & Postle 1991 — I. Bignamini and M. Postle, *The Artist's Model: its role in British art from Lely to Etty*, eds. M. Postle and J. Wright (exhib. cat., University Art Gallery, Nottingham and The Iveagh Bequest, Kenwood), Nottingham, 1991.

Bristow 1988 — I. Bristow, 'Somerset House, London: report on an investigation of paint samples from the first floor', unpublished report, December 1988.

Bristow 1996a — I. Bristow, *Interior house-painting colours and technology 1615-1840*, New Haven and London, 1996.

Bristow 1996b — I. Bristow, *Architectural colour in British interiors 1615-1840*, New Haven and London, 1996.

***Builder's Price Book* 1787** — *The builder's price book,* 4th edn., London, 1787.

Burbidge 1997 — J. Burbidge, 'Royal Academy Antique Academy (Gallery 1) Courtauld Galleries, Somerset House. Investigation to remove overpaints from the moulded plaster decoration: results of trials to remove overpaint', unpublished report, June 1997.

Manners & Williamson 1920 — V. Manners and G.C. Williamson, *Zoffany, R.A. His life and works, 1735-1810,* London and New York, 1920.

Newman 1990 — J. Newman, *Somerset House,* London, 1990.

Ricketts 1997 — A. Ricketts, 'Cheesecake and raspberry tarts', *The Spectator*, 14 June 1997, 48-49.

Snodin 1996 — M. Snodin, 'Interiors and Ornament', in *Sir William Chambers, Architect to George III*, eds. J. Harris and M. Snodin, London, 1996, 125-148.

Snodin 1996b — M. Snodin, *Sir William Chambers: catalogue of architectural drawings in the Victoria and Albert Museum*, London, 1996.

Table I - Royal Academy Antique Academy, ceiling

The table gives the location where each sample was taken, the sample number, its Courtauld archive accession number, the original decorative scheme and details regarding the overall thickness and appearance of subsequent paint layers. Measurements are given in micrometers (μm).

Sample No./ Accession No.	Location & Description	Original Scheme	Additional layers & Comments
10/2054	Wide outer floral moulding: *foliage.*	• **creamy white** oil-based paint which has been applied in 3 layers (total thickness 100 μm) • trace plaster substrate	• **Total thickness of repaint over the original layers 1500 μm (1.50 mm)** • approx. 14 phases of redecoration remain on the surface of the original in this sample - all are white or creamy white, with the exception of one dark layer and one which is dark beige in colour • dirt
11/2055	Wide outer floral moulding: *tip of petal.*	• **creamy white** oil-based paint which has been applied in 3 layers (total thickness 80 μm) • yellowish plaster support (containing calcium carbonate combined with calcium sulphate and oil)	• **Total thickness of repaint over the original layers 1080 μm (1.08 mm)** • approx. 15 phases of redecoration remain on the surface of the original in this sample - all are white or creamy white, with the exception of one dark layer and one which is dark beige in colour • dirt
12/2056	Wide outer floral moulding: *lattice motif.*	• Sample not mounted as cross-section, but examination under the binocular microscope at 45x magnification indicated that the original paint layer is **creamy white** in colour	
13/2057	Wide outer floral moulding: *rosette, outermost petal.*	• white oil-based paint layer with a very few orange and black pigment particles which probably produced a very **pale beige or 'stone' colour**. Colour applied in 3 layers (total thickness 80 μm) • yellowish plaster support (containing calcium carbonate combined with calcium sulphate and oil)	• **Total thickness of repaint over the original layers 1080 μm (1.08 mm)** • approx. 9 phases of redecoration remain on the surface of the original in this sample - all are white or creamy white, with the exception of one dark beige layer • dirt
14/2058	Wide outer floral moulding: *rosette, inner petal.*	• **creamy white** oil-based paint which has been applied in 2-3 layers (total thickness 75 μm) • yellowish plaster support (containing calcium carbonate combined with calcium sulphate and oil)	• **Total thickness of repaint over the original layers 1300 μm (1.3 mm)** • approx. 17 phases of redecoration remain on the surface of the original in this sample - all are white or creamy white, with the exception of two dark layers and one which is dark beige in colour • dirt
15/2059	Wide outer floral moulding: *background of rosette.*	• **creamy white** oil-based paint which has been applied in 3 layers (total thickness 75 μm) • yellowish plaster support (containing calcium carbonate combined with calcium sulphate and oil)	• **Total thickness of repaint over the original layers 980 μm (0.98 mm)** • approx. 13-14 phases of redecoration remain on the surface of the original in this sample - all are white or creamy white, with the exception of two thick dark layers • dirt
16/2060	Outermost moulding of ceiling: *stem.*	• **creamy white** oil-based paint which has been applied in 3 layers (total thickness 80 μm) • yellowish plaster support (containing calcium carbonate combined with calcium sulphate and oil)	• **Total thickness of repaint over the original layers 880 μm (0.88 mm)** • approx. 17 phases of redecoration remain on the surface of the original in this sample - all are white or creamy white, with the exception of one dark layer and one which is dark beige in colour • dirt

Sample No./ Accession No.	Location & Description	Original Scheme	Additional layers & Comments
17/2061	Outermost moulding of ceiling: *leaf.*	• Sample not mounted as cross-section, but examination under the binocular microscope at 45x magnification indicated that the original paint layer is **creamy white** in colour	
18/2062	Flat area of ceiling outside octagon around monogram.	• Sample not mounted as cross-section, but examination under the binocular microscope at 45x magnification indicated that the original paint layer is **pale green** in colour	
19/2063	Flat area of ceiling in central oval.	• a very few tiny red pigment particles in a white matrix producing a **pale 'flesh' pink** 20 μm • creamy white oil-based ground which has been applied in 2 layers (total thickness 35μm) • sealant - oil bulked out with calcium carbonate 15 μm • fine white plaster support (containing calcium carbonate, inert charge and oil)	• **Total thickness of repaint over the original layers remaining on sample 770 μm (0.77 mm)** • approx. 13 phases of redecoration remain on the surface of the original in this sample - all are white or creamy white or pale green in colour • the first phase of repainting appears to be a more intense version of the original colour • dirt
20/2064	Flat area of ceiling outside floral moulding around central oval.	• a very few tiny blue/green and yellow pigment particles in a white matrix producing a **pale green** 45 μm • white oil-based ground 10 μm • creamy white oil-based ground 35 μm • sealant - oil bulked out with calcium carbonate 15 μm • fine white plaster support (containing calcium carbonate, inert charge and oil)	• **Total thickness of repaint over the original layers remaining on sample 850 μm (0.85 mm)** • approx. 16 phases of redecoration remain on the surface of the original in this sample - all are white or creamy white or pale green in colour. In addition, the first phase of repainting appears to be a more intense version of the original colour (dark green) • dirt
21/2065	Flat area of ceiling in triangular segment at SW corner of oval.	• tiny red pigment particles in a white matrix producing a **pale 'flesh' pink** 25 μm • creamy white oil-based ground 30μm • sealant - oil bulked out with calcium carbonate 15 μm • fine white plaster support (containing calcium carbonate, inert charge and oil)	• **Total thickness of repaint over the original layers remaining on sample 900 μm (0.90 mm)** • approx. 14 phases of redecoration remain on the surface of the original in this sample - all are white, creamy white or pale green in colour, with the exception of one dark layer. In addition, the first phase of repainting appears to be a more intense version of the original colour (rich pink) • dirt
22/2066	Floral moulding around central oval: *petal.*	• white oil-based paint layer with a very dark ochre-coloured pigment particles which probably produced a **pale beige or 'stone' colour**. Colour applied in 3 layers (total thickness 170 μm) • yellowish plaster support (containing calcium carbonate combined with calcium sulphate and oil)	• **Total thickness of repaint over the original layers 1200 μm (1.20 mm)** • approx. 12 phases of redecoration remain on the surface of the original in this sample - all are white or creamy white, with the exception of one dark layer and one which is dark beige in colour • dirt
23/2067	Floral moulding around central oval: *foliage.*	• **creamy white** oil-based paint which has been applied in 2 layers (total thickness 70 μm) • yellowish plaster support (containing calcium carbonate combined with calcium sulphate and oil)	• **Total thickness of repaint over the original layers 1020 μm (1.02 mm)** • approx. 11 phases of redecoration remain on the surface of the original in this sample - all are white or creamy white, with the exception of one dark layer and one which is dark beige in colour • dirt

Sample No./ Accession No.	Location & Description	Original Scheme	Additional layers & Comments
24/2068	Floral moulding around central oval: *tip of stem.*	• creamy white oil-based paint which has been applied in 3 layers (total thickness 95 µm) • yellowish plaster support (containing calcium carbonate combined with calcium sulphate and oil)	• Total thickness of repaint over the original layers 1100 µm (1.10 mm) • approx. 15 phases of redecoration remain on the surface of the original in this sample - all are white or creamy white, with the exception of one dark layer • dirt
28/2072	Flat area of ceiling outside floral moulding surrounding monogram.	• tiny red pigment particles in a white(lime and lead white) matrix producing a **pale 'flesh' pink** 20 µm • white oil-based ground 50 µm • white oil-based ground 20 µm • sealant - oil bulked out with calcium carbonate 70 µm • fine white plaster support (containing calcium carbonate, inert charge and oil)	• **Total thickness of repaint over the original layers remaining on sample 830 µm (0.83 mm)** • approx. 15 phases of redecoration remain on the surface of the original in this sample - all are white, creamy white, pale green in colour, but the first first phase of repainting appears to be a more intense version of the original colour (rich pink) • the pale pink is the same colour as in sample 29/2073 • dirt
29/2073	Flat area of ceiling which forms the background to the monogram.	• tiny red pigment particles in a white(lime and lead white) matrix producing a **pale 'flesh' pink** 20 µm • white oil-based ground 20 µm • a very few tiny blue/green and yellow pigment particles in a white matrix producing the **a pale green** 45 µm • sealant - oil bulked out with calcium carbonate 70 µm • fine white plaster support (containing calcium carbonate, inert charge and oil)	• **Total thickness of repaint over the original layers remaining on sample 870 µm (0.87 mm)** • approx. 15 phases of redecoration remain on the surface of the original in this sample - all are white, creamy white, beige or pale green in colour, but the first first phase of repainting appears to be a more intense version of the original colour (rich pink) • the pale pink is the same colour as in sample 28/2072 • dirt
30/2074	Floral moulding around monogram: *leaf.*	• white oil-based paint layer with a very few orange and black pigment particles which probably produced a **pale beige colour.** Colour applied in 2 layers (total thickness 250 µm) • fine white plaster support (containing calcium carbonate, inert charge and oil)	• **Total thickness of repaint over the original layers 1000 µm (1.0 mm)** • approx. 17 phases of redecoration remain on the surface of the original in this sample - all are white or creamy white, with the exception of one pale green in colour • dirt
31/2075	Floral moulding around monogram: *berry.*	• Sample not mounted as cross-section, but examination under the binocular microscope at 45x magnification indicated that the original paint layer is **creamy white** in colour	
36/2080	Monogram: *swag.*	• **creamy white** (or perhaps a **very pale grey** since one or two black particles are present) oil-based paint which has been applied in 2 layers (total thickness 90 µm) • yellowish plaster support (containing calcium carbonate combined with calcium sulphate and oil)	• **Total thickness of repaint over the original layers 1700 µm (1.70 mm)** • approx. 12 phases of redecoration remain on the surface of the original in this sample - all are white or creamy white, with the exception of one which is pale green in colour • dirt
37/2081	Square outer moulding around monogram: *stem.*	• **creamy white** oil-based paint which has been applied in 3 layers (total thickness 90 µm) • yellowish plaster support (containing calcium carbonate combined with calcium sulphate and oil)	• **Total thickness of repaint over the original layers 1300 µm (1.30 mm)** • approx. 14 phases of redecoration remain on the surface of the original in this sample - all are white or creamy white, with the exception of one dark layer and one which is dark beige in colour • dirt

Sample No./ Accession No.	Location & Description	Original Scheme	Additional layers & Comments
38/2082	Square outer moulding around monogram: *foliage.*	• creamy white oil-based paint which has been applied in 2 layers (total thickness 75 µm) • fine white plaster support (containing calcium carbonate, inert charge and oil)	• Total thickness of repaint over the original layers 1320 µm (1.32 mm) • approx. 15 phases of redecoration remain on the surface of the original in this sample - all are white or creamy white, with the exception of one dark layer and one which is dark beige in colour • dirt
39/2083	Octagonal moulding around monogram.	• white oil-based paint layer with a very few orange and black pigment particles which probably produced a very **pale beige or 'stone' colour.** Colour applied in 3 layers (total thickness 150 µm) • sealant - oil bulked out with calcium carbonate 15 µm • fine white plaster support (containing calcium carbonate, inert charge and oil)	• **Total thickness of repaint over the original layers 1200 µm (1.2 mm)** • approx. 13 phases of redecoration remain on the surface of the original in this sample - all are white or creamy white, with the exception of one dark layer and one which is dark beige in colour • dirt
41/2085	Ellipse moulding around central oval: *motif between ellipses.*	• white oil-based paint layer with a very few orange and black pigment particles which probably produced a very **pale beige or 'stone' colour.** Paint applied in 2 layers (total thickness 80 µm) • yellowish plaster support (containing calcium carbonate combined with calcium sulphate and oil)	• **Total thickness of repaint over the original layers which remains on sample 250 µm (0.25 mm)** • approx. 5 phases of redecoration remain on the surface of the original in this sample - all are white or creamy white in colour • dirt
42/2086	Ellipse moulding around central oval: *inside of ellipse.*	• **creamy white** oil-based paint which has been applied in 1-2 layers (total thickness 75 µm) • yellowish plaster support (containing calcium carbonate combined with calcium sulphate and oil)	• **Total thickness of repaint over the original layers which remains on sample 450 µm (0.45 mm)** • approx. 8 phases of redecoration remain on the surface of the original in this sample - all are white or creamy white in colour with the exception of one dark layer • dirt
43/2087	Ellipse moulding around central oval: *raised portion of ellipse.*	• not mounted as cross-section, but examination under binocular microscope at 45x indicated that original paint layer is **creamy white** in colour	
44/2088	Border dividing ellipse moulding from floral moulding around central oval: *portion of border adjacent to floral moulding.*	• **creamy white** oil-based paint which has been applied in 3 layers (total thickness 75 µm) • trace white substrate	• **Total thickness of repaint over the original layers which remains on sample 450 µm (0.45 mm)** • approx. 7 phases of redecoration remain on the surface of the original in this sample - all are white or creamy white, with the exception of one dark layer and one which is dark beige in colour • dirt
45/2089	Border dividing ellipse moulding from floral moulding around central oval: *portion of border adjacent to ellipse moulding.*	• **creamy white** oil-based paint which has been applied in 2 layers (total thickness 55 µm) • sealant - oil bulked out with calcium carbonate 15 µm • fine white plaster support (containing calcium carbonate, inert charge and oil)	• **Total thickness of repaint over the original layers 820 µm (0.82 mm)** • approx. 13 phases of redecoration remain on the surface of the original in this sample - all are white or creamy white in colour • dirt

Table II - Royal Academy Antique Academy, cornice

The table gives the location where each sample was taken, the sample number, its Courtauld archive accession number, the original decorative scheme and details regarding the overall thickness and appearance of subsequent paint layers. Measurements are given in micrometers (μm).

Sample No./ Accession No.	Location & Description	Original Scheme	Additional layers & Comments
1/2045	SW corner of gallery, cornice, uppermost foliate element: *tip of foliage.*	• **creamy white** oil-based paint which has been applied in 2-3 layers (total thickness 80μm) • yellowish plaster support (containing calcium carbonate combined with calcium sulphate and oil)	• **Total thickness of repaint over the original layers 1500μm (1.5 mm)** • **Thickness of uppermost white emulsion layers 500μm (0.5 mm).** • approx. 15 phases of redecoration mainly white, beige or creamy/yellow in colour • dirt
2/2046	SW corner of gallery, cornice: *dentil element:*	• **creamy white** oil-based paint which has been applied in 2-3 layers (total thickness 100μm) • yellowish plaster support (containing calcium carbonate combined with calcium sulphate and oil)	• **Total thickness of repaint over the original layers 1050μm (1.05 mm)** • **Thickness of single uppermost white emulsion layer 400μm (0.4 mm).** • **Thickness of all uppermost white emulsion layers 580μm (0.58 mm).** • approx. 15 phases of redecoration, mainly white or creamy/yellow in colour • dirt
3/2047	SW corner of gallery, cornice, egg and dart element: *egg.*	• **warm beige or 'stone'** coloured oil-based paint (a few red, yellow and black pigment particles are present in a white matrix) which has been applied in 2 layers (total thickness 140μm) • yellowish plaster support (containing calcium carbonate combined with calcium sulphate and oil)	• **Total thickness of repaint over the original layers 1020μm (1.02 mm)** • **Thickness of uppermost white emulsion layers 380μm (0.38 mm).** • approx. 10 phases of redecoration, mainly white or creamy/yellow in colour • dirt
4/2048	SW corner of gallery, cornice: *foliate element at base of cornice.*	• **creamy white** oil-based paint which has been applied in 2 layers (total thickness 75μm) • yellowish plaster support (containing calcium carbonate combined with calcium sulphate and oil)	• **Total thickness of repaint over the original layers 950μm (0.95 mm)** • **Thickness of uppermost white emulsion layers 350μm (0.35 mm).** • approx. 15 phases of redecoration mainly white, beige or creamy/yellow in colour • dirt
5/2049	SW corner of gallery, cornice, dentil element: *tip at base.*	• **creamy white** oil-based paint which has been applied in 2 layers (total thickness 65μm) • yellowish plaster support (containing calcium carbonate combined with calcium sulphate and oil)	• **Total thickness of remaining repaint over the original layers 450 μm (0.45 mm)** • approx. 5 phases of redecoration (mainly beige or creamy white in colour) remain on the surface of the original in this sample. • dirt
6/2050	SW corner of gallery, cornice dentil element: *recess between blocks.*	• original layers not present in sample	
7/2051	SW corner of gallery, cornice: *flat zone below egg and dart element.*	• **creamy white** oil-based paint which has been applied in 2 layers (total thickness 100μm) • white plaster support (containing calcium carbonate, inert charge and oil)	• **Total thickness of repaint over the original layers 1200μm (1.2 mm)** • approx. 12 phases of redecoration, mainly white or creamy/yellow in colour • dirt

Sample No./ Accession No.	Location & Description	Original Scheme	Additional layers & Comments
8/ 2052	SW corner of gallery, cornice: *flat zone below uppermost foliate element.*	• **warm beige or 'stone'** coloured oil-based paint (a few red, yellow and black pigment particles are present in a white matrix) which has been applied in 2 layers (total thickness 85μm) • white plaster support (containing calcium carbonate, inert charge and oil)	• **Total thickness of repaint over the original layers 550μm (0.55 mm)** • approx. 9 phases of redecoration, mainly white or creamy/yellow in colour • dirt
25/2069	SW corner of gallery, cornice, egg and dart element: *dart.*	• not mounted as cross-section, but examination under binocular microscope at 45x indicated that original paint layer is **creamy white** in colour	
26/2070	SW corner of gallery, cornice, dentil element: *recess in face of block..*	• **creamy white** oil-based paint which has been applied in 2 layers (total thickness 80μm) • yellowish plaster support (containing calcium carbonate combined with calcium sulphate and oil)	• **Total thickness of repaint over the original layers 525 μm (0.525 mm)** • approx. 11 phases of redecoration, mainly white, beige or creamy/yellow in colour • dirt
27/2071	SW corner of gallery, cornice, uppermost foliate element: *stem.*	• **warm beige or 'stone'** coloured oil-based paint (a few red, yellow and black pigment particles are present in a white matrix) which has been applied in 3 layers (total thickness 300μm) • yellowish plaster support (containing calcium carbonate combined with calcium sulphate and oil)	• **Total thickness of repaint over the original layers 1100 μm (1.1 mm)** • **Thickness of uppermost white emulsion layers 500μm (0.5 mm).** • approx. 13 phases of redecoration, mainly white, creamy white or creamy/yellow in colour • dirt
40/2084	SW corner of gallery, cornice, moulding just below uppermost foliate element.	• **creamy white** oil-based paint which has been applied in 2 layers (total thickness 80μm) • yellowish plaster support (containing calcium carbonate combined with calcium sulphate and oil)	• **Total thickness of repaint over the original layers 700 μm (0.7 mm)** • approx. 12 phases of redecoration, mainly white, grey, beige or creamy/yellow in colour • dirt
JB7a/2122	SW corner of gallery, cornice: cleaning test 7a - three applications of *Leyland All Purpose Stripper.*		• **Total thickness of repaint over the original layers 250 μm (0.25 mm)** • approximately 5 phases of redecoration remain on the surface of the original
JB6/2123	SW corner of gallery, cornice: cleaning test 6 - one application of *Leyland All Purpose Stripper.*		• **Total thickness of repaint over the original layers 800-900 μm (0.8 - 0.9 mm)** • all except one of the upper emulsion layers have been removed from the surface

☙ *Table III - Royal Academy Antique Academy, walls*

The table gives the location where each sample was taken, the sample number, its Courtauld archive accession number, the original decorative scheme and details regarding the overall thickness and appearance of subsequent paint layers. Measurements are given in micrometers (μm).

Sample No./ Accession No.	Location & Description	Original Scheme	Additional layers & Comments
9/2053	Coving.	• **'pea' green colour** 20μm • white ground 50 μm • white plaster support (containing lime and inert charge—silica—combined a ratio visually estimated to be 1:2, together with oil). The uppermost 650 μm of this layer is lime rich, with very little silica.	• **Total thickness of remaining repaint over the original layers 1060 μm (1.06 mm)** • approx 16 other phases of redecoration, including dark green, creamy white and pale green. • dirt
32/2076	Wall above SW niche.	• **warm mid-green colour** 25 μm • white ground 40 μm • oil sealant 1μm • white plaster support (containing lime and inert charge—silica—combined a ratio visually estimated to be 1:2, together with oil).	• **Total thickness of remaining repaint over the original layers 880 μm (0.88 mm)** • approx. 17 other phases of redecoration, including various shades of green, creamy white and yellow. • dirt
46/2090	Dado panelling.	• **pale grey** (charcoal black in white matrix) oil-based paint which has been applied in 2 layers (total thickness 80μm) • wood	• **Total thickness of remaining repaint over the original layers 1100 μm (1.10 mm)** • approx. 16 other phases of redecoration, including creamy white, dark brown, yellow and pale green. • dirt

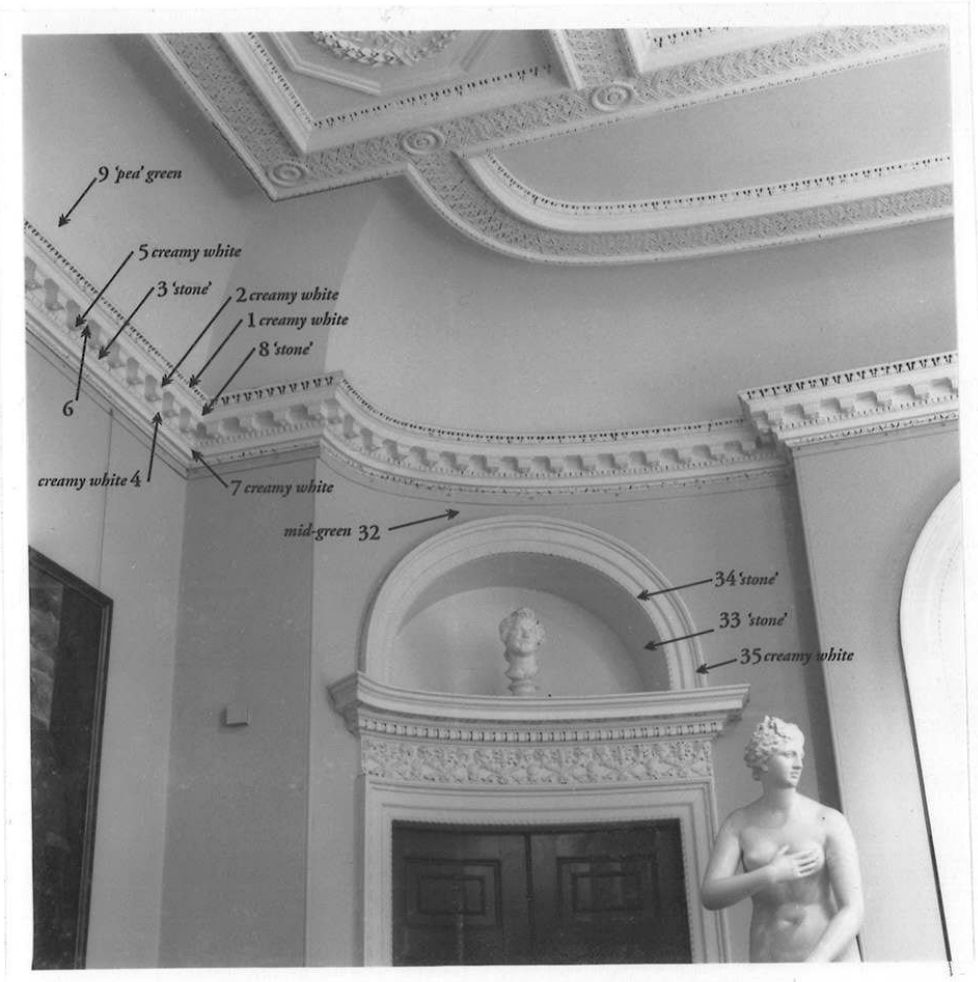
☙ *Table IV - Royal Academy Antique Academy, south-west niche and door*

The table gives the location where each sample was taken, the sample number, its Courtauld archive accession number, the original decorative scheme and details regarding the overall thickness and appearance of subsequent paint layers. Measurements are given in micrometers (μm).

Sample No./ Accession No.	Location & Description	Original Scheme	Additional layers & Comments
33/2077	Inside of niche.	• **beige or 'stone' colour** (a very few black and yellow particles in white matrix) oil-based paint which has been applied in 3 layers (total thickness 150μm)	• **Total thickness of remaining repaint over the original layers 980 μm (0.98 mm)** • approx. 15-16 other phases of redecoration, including dark green, creamy white and pale beige. • dirt
34/2078	Moulding around niche: *inner order.*	• **beige or 'stone' colour** (a very few black and yellow particles in white matrix) oil-based paint which has been applied in 2-3 layers (total thickness 120μm)	• **Total thickness of remaining repaint over the original layers 700 μm (0.70 mm)** • approx. 8 other phases of redecoration, mainly white or creamy/yellow in colour • dirt
35/2079	Moulding around niche: *outer order.*	• **creamy white** oil-based paint which has been applied in 2 layers (total thickness 75 μm)	• **Total thickness of remaining repaint over the original layers 1000 μm (1.0 mm)** • approx. 12 other phases of redecoration, mainly white or creamy/yellow in colour • dirt
47/2091	SW door: architrave: *raised decorative motif.*	• **creamy white** oil-based paint 20 μm • wood	• **Total thickness of remaining repaint over the original layers 2400 μm (2.4 mm)** • approx. 16 other phases of redecoration, mainly white or creamy/yellow in colour • dirt
48/2092	SW door: architrave: *background of raised decorative motif.*	• **pale grey** (charcoal black in white matrix) oil-based paint which has been applied in 3 layers (total thickness 90μm) • wood	• **Total thickness of remaining repaint over the original layers 950 μm (0.95 mm)** • approx. 14 other phases of redecoration, including grey, creamy white and white • dirt

Plate 1. E. F. Burney, *The Antique Room, New Somerset House,* tinted pen drawing, *c.*1785, The Royal Academy of Arts, Cab. A/Box 35. The room is viewed toward the west, while the Zoffany (Plate 2) is viewed toward the east. *(Reproduced from Newman 1990: p.34)*

Plate 2. *The Antique School of the Royal Academy at New Somerset House*, attributed to Johan Zoffany, previously dated to *c.*1780-83, The Royal Academy of Arts. Students of the Academy are shown drawing antique casts lit by oil-lamps with triple-reflectors. The depiction of the painting scheme of the room—predominately of mid-green and dark red—represents the second phase of decoration, indicating that the previous dating of the painting is somewhat too early. *(Photograph courtesy of the Department of Conservation and Technology, Courtauld Institute of Art)*



Locations for samples 1-9 and 32-35.
For a more detailed view of Samples 2-9, see ***Sample Locations I.***
(Photograph: Photographic Department, Courtauld Institute, 1997)

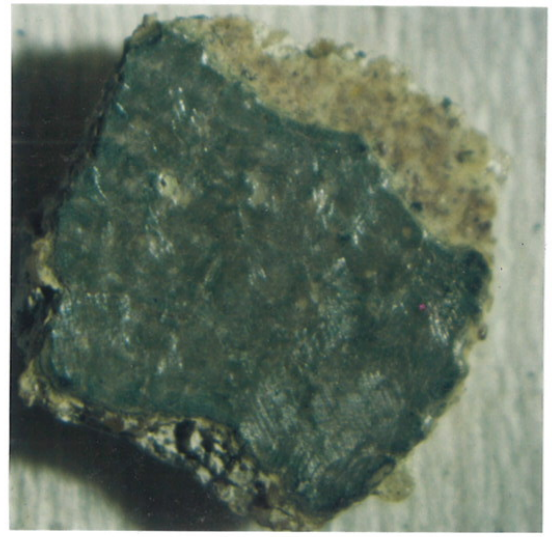
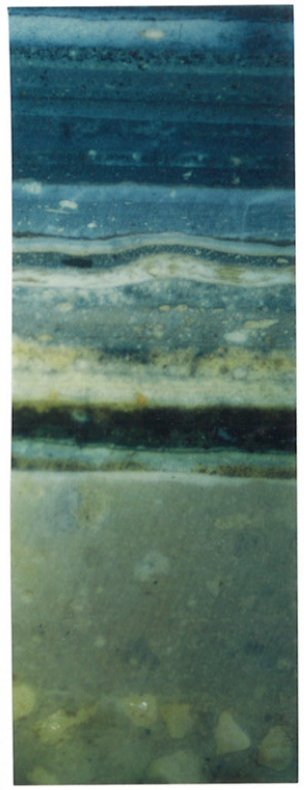


Plate 3 *(above left).* Uncovering test of walls undertaken *in situ*. Six of the colours— including white, yellow, two greens and beige—employed for various phases of redecoration have been revealed. Working on a scaffold and without the aid of magnification, it was not possible to successfully reveal the original green colour from beneath the dark layer shown at the base of the plate.

Plate 4 *(above)* Cross-section of Sample 32, taken from the wall. Over the coarse plaster layer a white priming layer is visible, followed by the original pale green colour. A layer of dirt is clearly visible on top of the original green layer. Over this a darker version of the original green has been applied over a grey ground for the first phase of redecoration, terminated again by a thick dark accretion.

Plate 5 *(upper right).* Uncovering test undertaken in the laboratory at 45x magnification showing the colour of the first phase of repainting. **Plate 6** *(lower right).* Uncovering test undertaken in the laboratory at 45x magnification showing the original green colour of the walls. Actual size of fragment 9 x 9 mm.
(Photographs and photomicrographs: Howard 1997)

Plate 7 *(left).* Uncovering test of the coving undertaken *in situ.* Six of the colours—including white, two greens, beige and brown—employed for various phases of redecoration have been revealed. Working on a scaffold and without the aid of magnification, it was not possible to successfully reveal the original green colour from beneath the dark layer shown at the base of the plate.



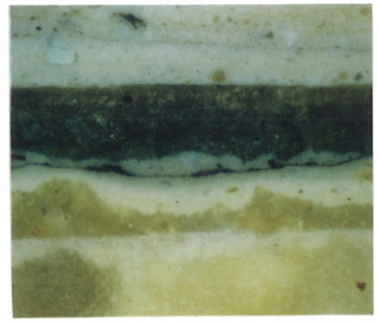


Plate 8 *(above left).* Cross-section of Sample 9, taken from the coving. A fine plaster layer has been applied over the coarse plaster substrate. Over this white priming layers are visible, followed by the original pale green colour. A layer of dirt is clearly visible on top of the original green layer. For the first phase of redecoration, a darker version of the original green has been applied over a white ground, terminated again by a thick dark accretion. This portion of the stratigraphy is shown at higher magnification in **Plate 9** *(above right).* **Plate 10** *(above centre).* Cross-section of Sample 9 stained blue with Sudan black B and thus indicating zones where oil may be present—such as in the plaster support, original scheme and many of the subsequent phases of redecoration. This type of testing was supported by instrumental analysis (FTIR).

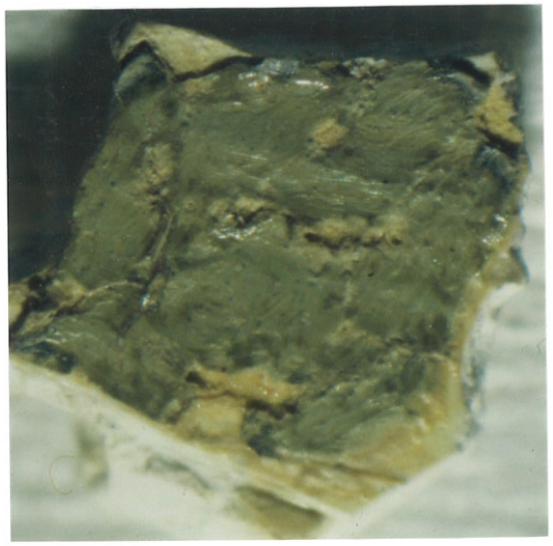


Plate 11 *(right)* Uncovering test undertaken in the laboratory at 45x magnification showing the colour of the original green colour of the coving. Actual size of fragment 7 x 6 mm.

(Photographs and photomicrographs: Howard 1997)

Plate 12 *(left).* Cross-section of Sample 33 taken from the inside of the niche. The lowest (original) layer of paint would probably have appeared a slightly warm beige or 'stone' colour, since there are a few yellow and black pigment particles in a creamy white matrix. These tiny pigment particles are more clearly visible in the detail of the cross-section (**Plate 13**, *below*). The first phase of repainting is a dark blue/green colour, similar in appearance to the colour employed for the first repainting of the walls (Plates 4 & 5). *(Photomicrographs: Howard 1997)*

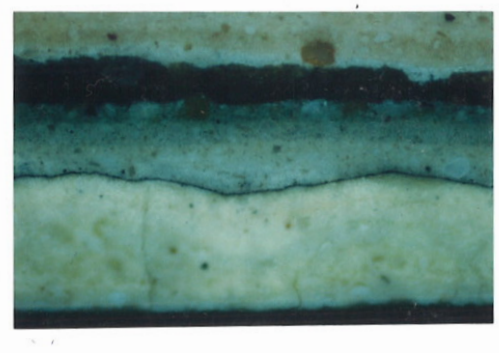
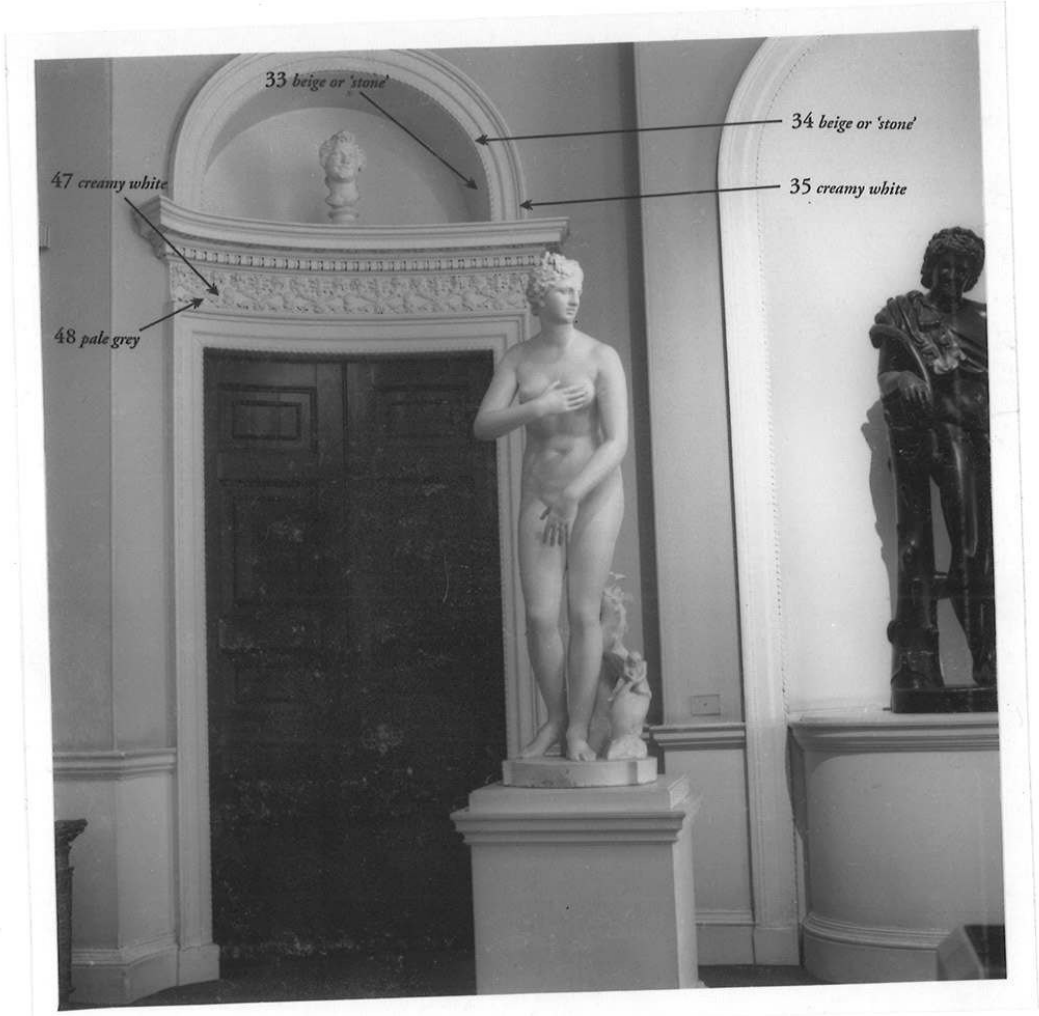


Plate 14 *(left).* Cross-section of Sample 46 taken from the dado panelling. Here the support is wood (not visible in this cross-section), and following the creamy white priming layer, a pale grey colour has been applied. The finishing oil-based paint contains particles of charcoal black in a white matrix. Over the original colour a distinct layer of dirt is visible. There are also approximately 16 phases of redecoration, including creamy white, white, yellow, pale green and dark red/brown. *(Photomicrograph: Howard 1997)*



Locations for samples 33-35 and 47-48.
For a more detailed view of Samples 47-48, see **Sample Locations C.**
(Photograph: Photographic Department, Courtauld Institute, 1997)

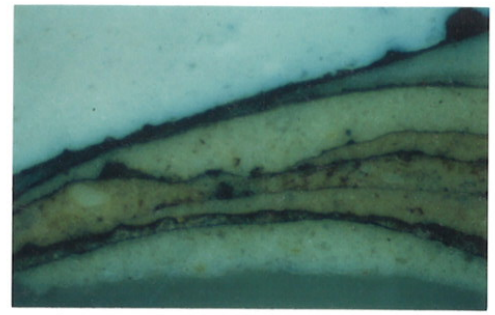
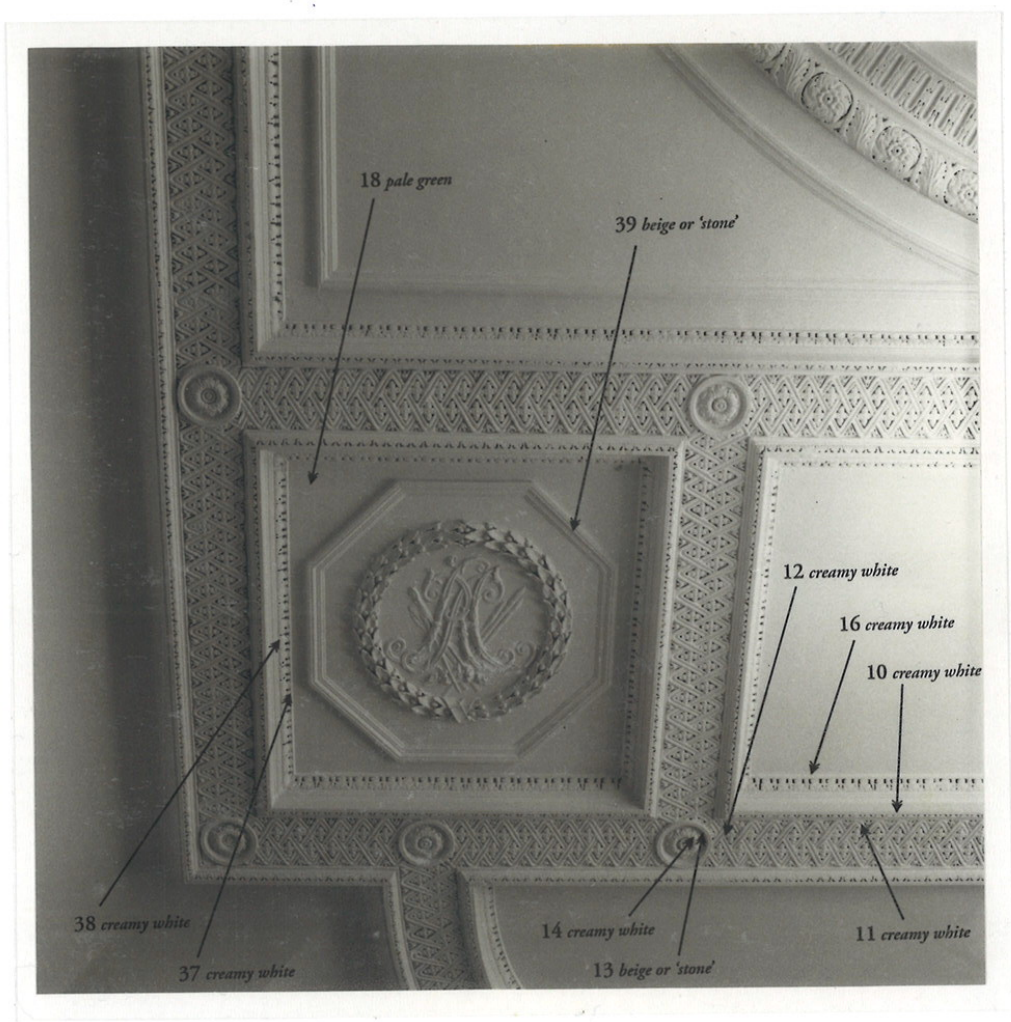


Plate 15 *(left).* Cross-section of Sample 48, taken from the background of the raised decoration of the architrave of the southwest door. Unfortunately, the lowest (original) paint layer is barely visible in the photomicrograph, but a single black particle at bottom right is indicative of a layer which consists of charcoal black in a white matrix. The overall appearance is likely to have been a pale grey colour. The support here is wood (again missing in the cross-section). **Plate 16** *(above)* Cross-section of Sample 47, taken from the raised decoration on the architrave. The original paint-layer here would have been creamy white in appearance. The contrast provided by the pale-grey shadowing (Sample 48, Plate 15) would have enhanced the relief of the ornament. *(Photomicrographs: Howard 1997).*

Plate 17 *(left).* Cross-section of Sample 47b, taken from the raised decoration on the architrave, photographed in UV light. The structure of the wooden support, and the penetration of the oil-based priming layer into it are clearly visible. **Plate 18** *(below).* Cross-section of Sample 34 taken from the inner order of moulding around the niche. The original at the base of the sample, appears to be a warm beige or 'stone' colour. *(Photomicrographs: Howard 1997).*

Locations for samples 47-48.
(Photograph: Howard, 1997)



Locations for samples 10-14, 16, 18 and 37-39.
For a more detailed view of Samples 10-12 and 16-17, see **Sample Locations G.**
(Photograph: Photographic Department, Courtauld Institute, 1997)

Plate 19 *(left).* Uncovering test undertaken in the laboratory at 45x magnification revealed the original colour of the central oval of the ceiling. The actual dimensions of this fragment from Sample 19 are 9 x 5 mm. *(Photograph: Howard 1997)*

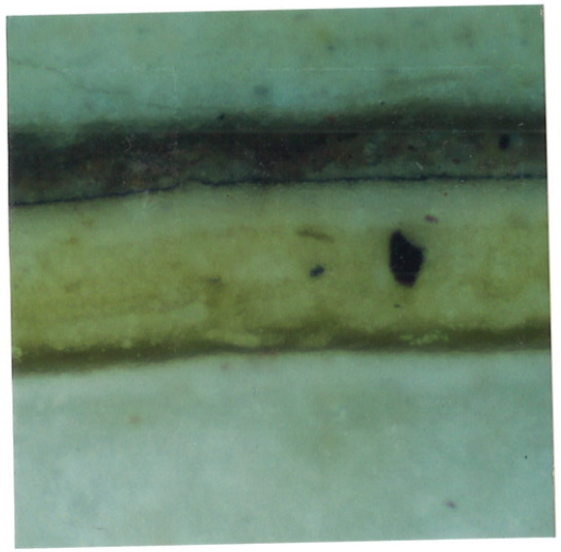
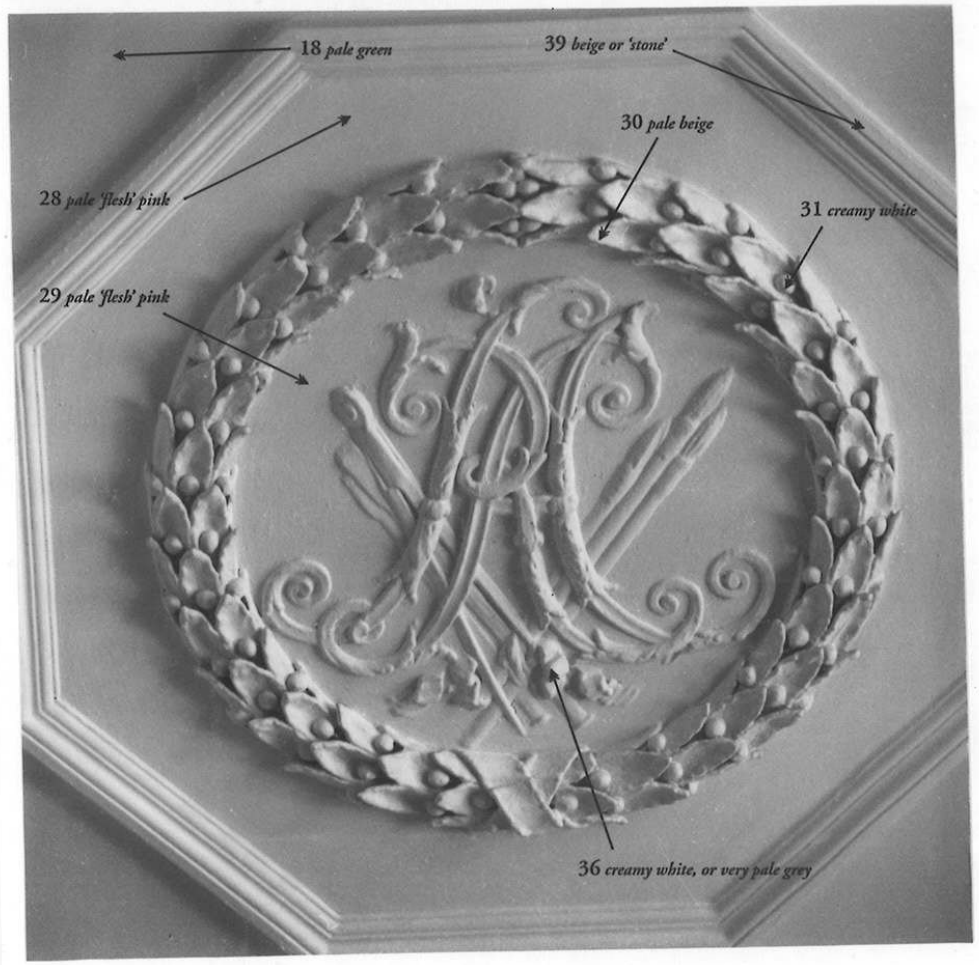


Plate 20 *(above right)* Cross-section of Sample 19 showing the stratigraphy of the sample, including the numerous phases of repainting in white, creamy white and beige.

Plate 21 *(above left)* Detail of Plate 20, showing the white plaster substrate (lower zone), with the oil-based sealant (primer) on top of it. Over this are several layers of the creamy white ground which consists of lead white and chalk in an oil medium. The finishing layer of the original scheme is a very pale pink (only a couple of tiny red particles are visible in the plate). A distinct layer of dirt terminates the original decoration. The first phase of redecoration repeats the colour of the original, but in a much darker and richer pink colour. It appears that more than one red pigment has been employed in the first phase of repainting (perhaps a red lake with a little red lead). *(Photomicrographs: Howard 1997)*

Plate 22 *(left).* Cross-section of Sample 21 taken from the triangular segment at the southwest corner of the central rectangle of the ceiling. The oil-based sealant for the fine white plaster layer is clearly visible in the lowest part of the plate, and over this, a white ground of lead white and chalk in oil. The original finishing colour is a similar pale pink to that used for the central oval (Plates 19-21). The original decoration is again terminated by a dirt layer. *(Photomicrograph: Howard 1997)*

Plate 23 *(right).* Cross-section of Sample 38 taken from a foliate element in the square outer moulding around the monogram on the ceiling. At the base of the plate, the yellow plaster substrate—which consists of calcium carbonate and calcium sulphate combined with oil—is clearly visible. The creamy white original paint layer can be seen directly on the plaster surface. Numerous phases of redecoration, mainly in creamy white, white, and beige are present on top of the original paint layers. **Plate 24** *(far right).* The original colour scheme is repeated in Sample 37, taken from a stem (foliate element) in the square outer moulding around the monogram. *(Photomicrographs: Howard 1997)*



Locations for samples 18, 28-31, 36 and 39.
(Photograph: Photographic Department, Courtauld Institute, 1997)

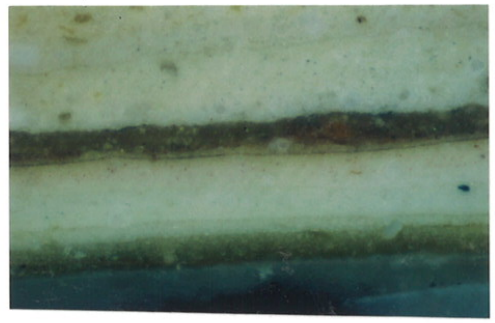


Plate 25a *(left).* Cross-section of Sample 28 taken from the flat zone of ceiling outside the wreath surrounding the monogram. Over the oil-based sealant for the plaster, a number of white ground layers are visible, followed by the finishing colour of the original scheme which is a pale pink (a few tiny red particles are visible in the lead white matrix). On top of the dirt layer, the first phase of repainting is clearly visible. It repeats the pink colour of the original, but is a considerably darker and richer hue (large red pigment particles are visible in this layer). *(Photomicrograph: Howard, 1977)*

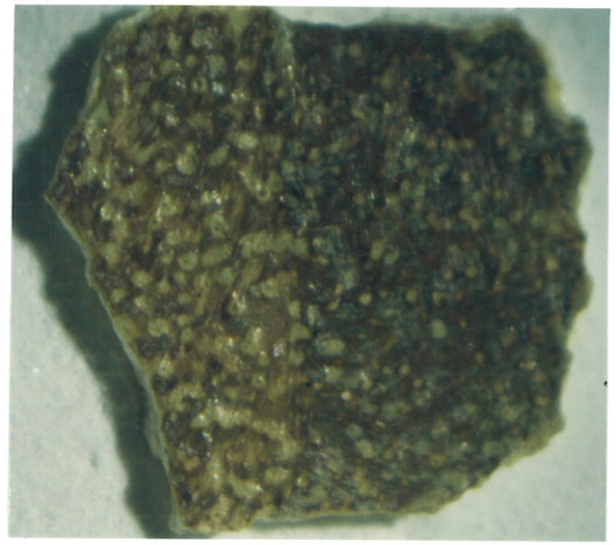
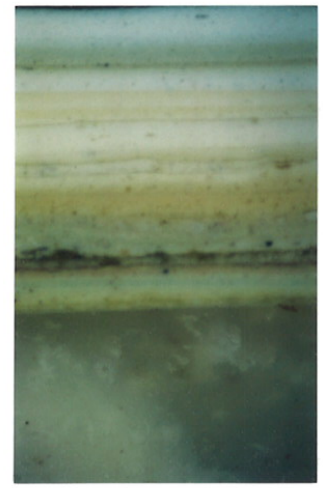
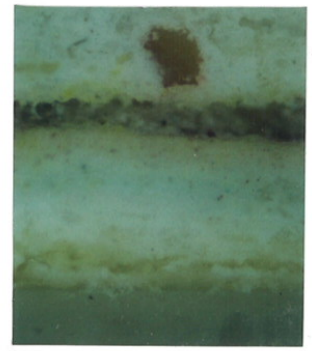


Plate 25b *(left).* Uncovering test undertaken in the laboratory at 45x magnification revealed the original pale pink colour of the flat zone outside the wreath surrounding the monogram (at left side of plate). The darker red of the first phase of redecoration is shown at the right side of the plate. The actual dimensions of this fragment from Sample 28 are 8 x 8 mm. *(Macrophotograph: Howard, 1977)*

Plates 26 & 27 *(right).* Close examination of Sample 29, taken from the background of the monogram inside the foliate wreath, indicates that this area was initially painted a pale green colour, but that this was swiftly changed to a pale pink to match that outside the wreath but inside the octagonal moulding (Sample 28, Plate 25). Plate 27 *(far right)* shows the original scheme at greater magnification, with the pink lying directly over the pale green. The zone just outside the octagonal moulding remained a pale green colour (Sample 18). *(Photomicrographs: Howard 1997)*





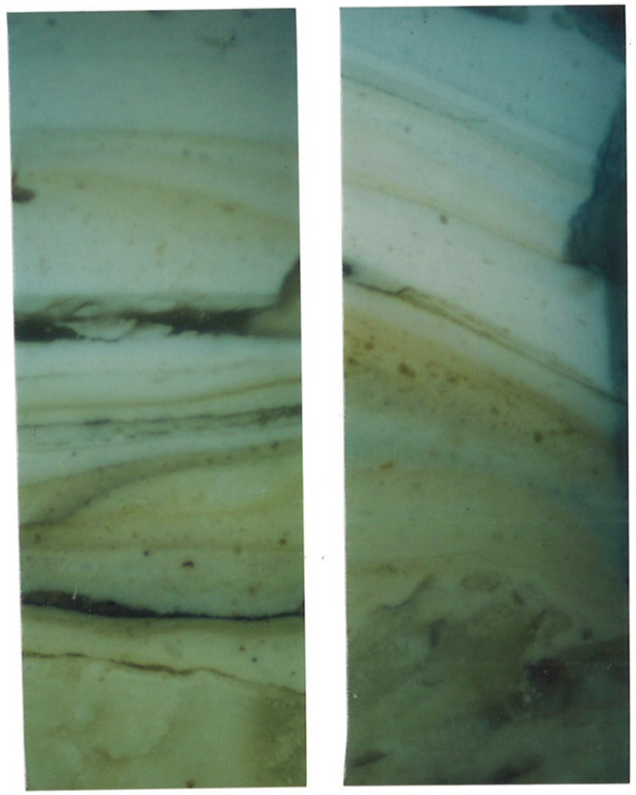
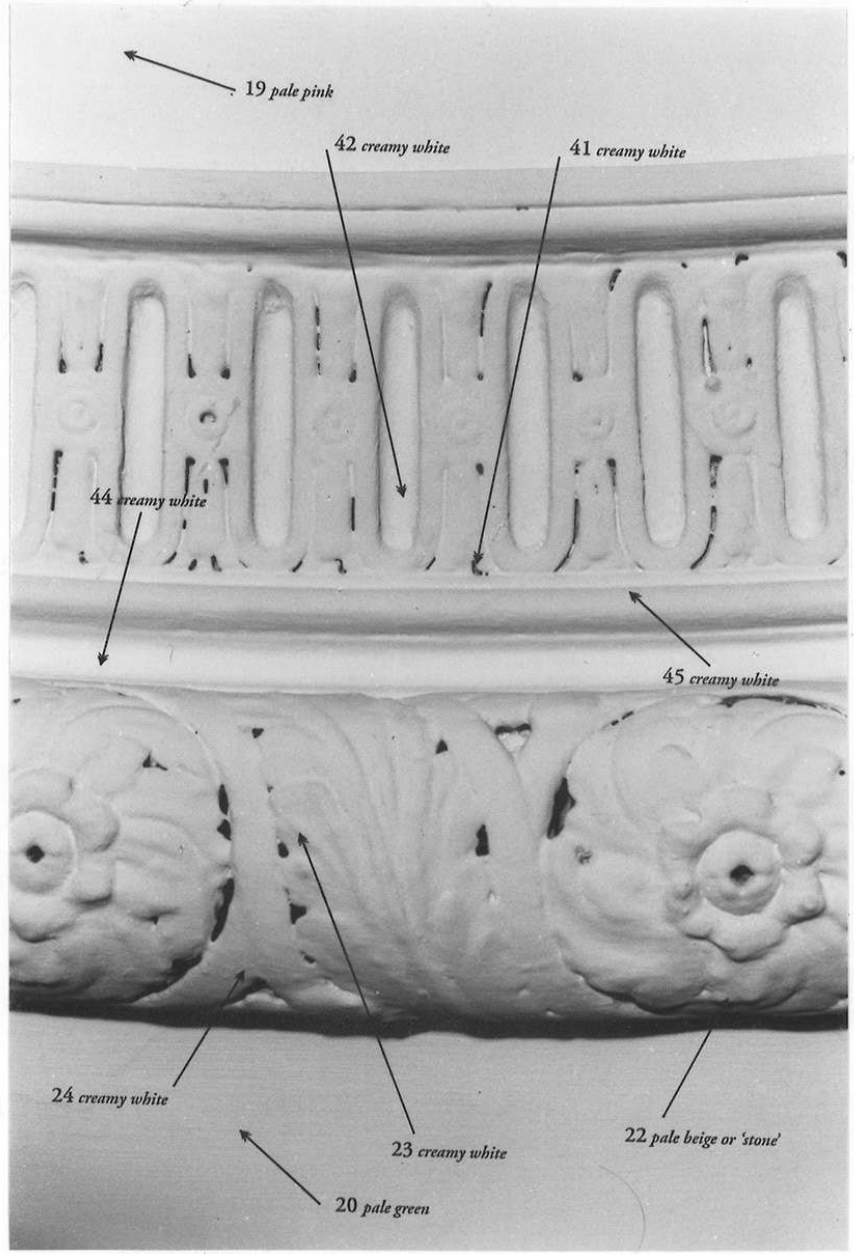


Plate 28 *(left).* Cross-section of Sample 39 taken from the octagonal moulding around the monogram. Again the sealant over the white plaster is visible at the bottom of the plate. A white ground has then been applied, over which is a pale beige or 'stone' coloured layer which represents the original decoration. A thick dark dirt layer terminates the original scheme.

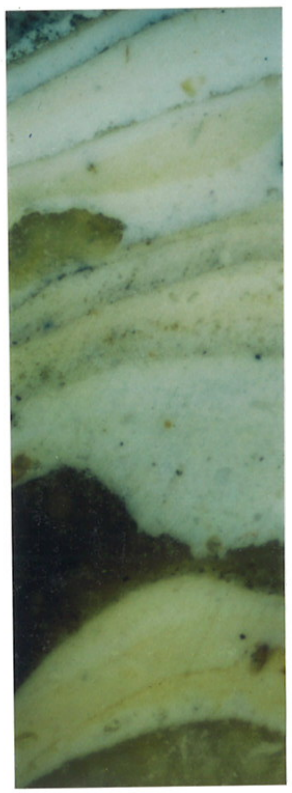
Plate 29 *(right)* Cross-section of Sample 30 taken from wreath surrounding the monogram. Again the original paint layer appears to be a pale beige or 'stone' colour. *(Photomicrographs: Howard 1997)*

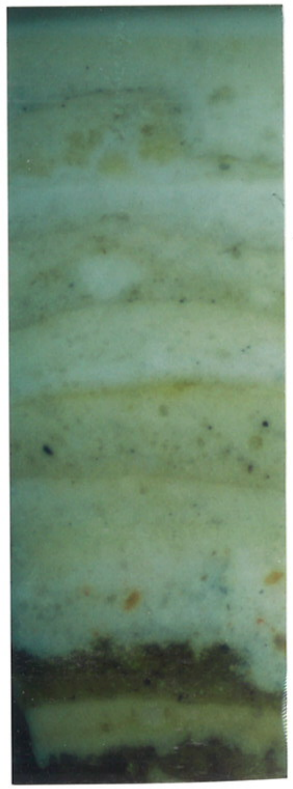


Locations for samples 19, 20, 22-24, 41-42 and 44-45.
(Photograph: Howard, 1997)

Plate 30 *(left).* Cross-section of Sample 20, taken from the flat zone of the ceiling outside the floral moulding around the central oval. Over the white plaster substrate, white ground layers are visible, and over this, the original pale green colour. The first scheme of repainting repeats the green colour but in a darker and richer hue. The pigment particles in the first phase of repainting are also much coarser than those used in the original decoration. *(Photomicrograph: Howard 1997)*

Plate 31 *(below left).* Cross-section of Sample 22 taken from a petal in the floral moulding around the central oval. The yellow-coloured plaster is just visible at the base of the plate, and over this the creamy white original paint layer. Both the original stratigraphy and colour are mirrored in Sample 23 (**Plate 32**, *below right),* taken from the foliage of the same floral moulding. *(Photomicrographs: Howard 1997)*





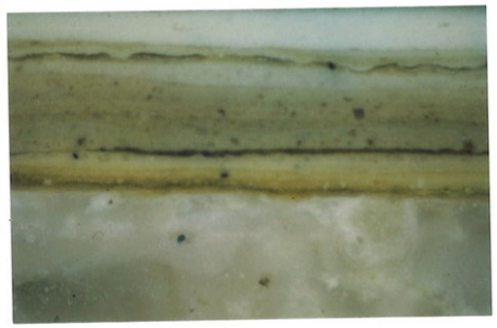
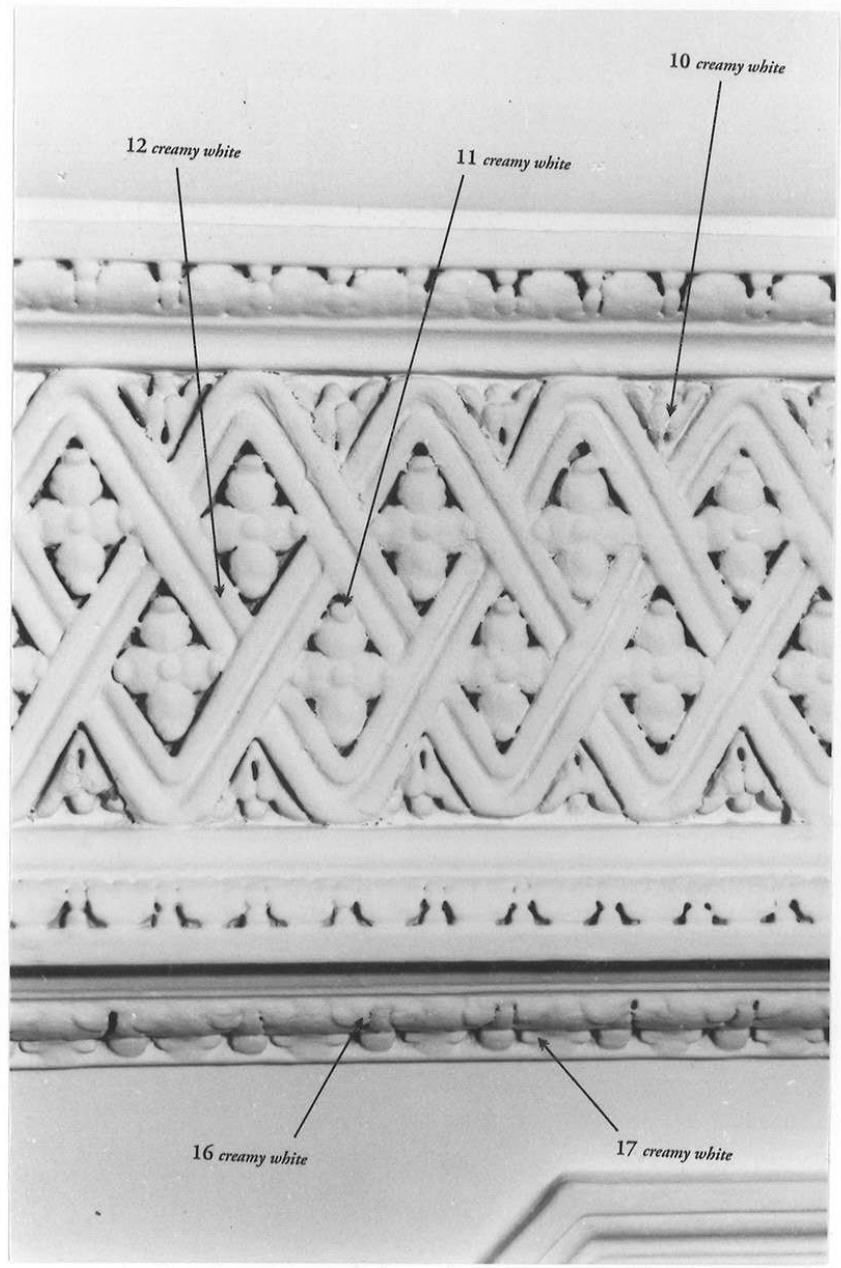


Plate 33 *(above).* Cross-section of Sample 45 taken from the moulding which divides the ellipse and floral mouldings around the central oval of the ceiling. The oil-based sealant is clearly visible over the white plaster of the moulding; above this, the creamy white original paint layer is visible. As in other samples, a dirt layer is visible on top of the original scheme. *(Photomicrograph: Howard 1997)*



Locations for samples 10-12 and 16-17.
(Photograph: Howard, 1997)

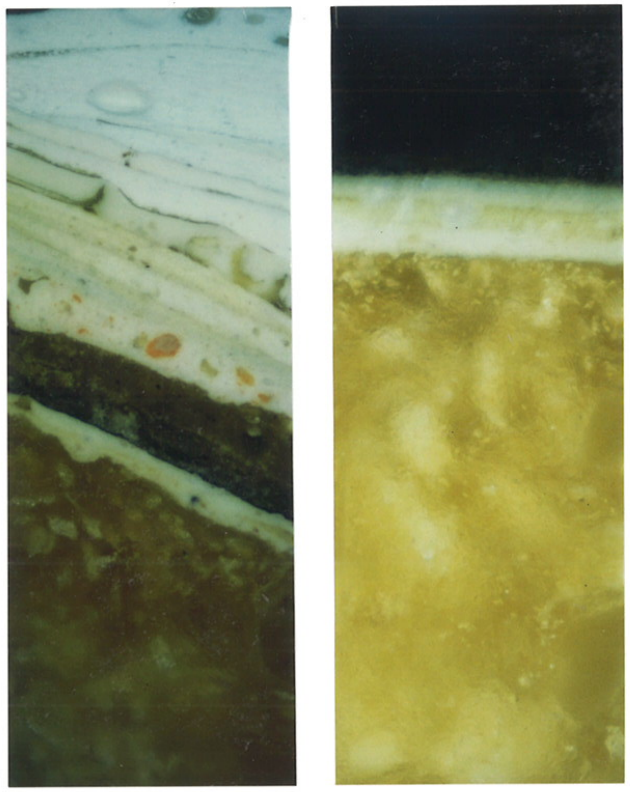
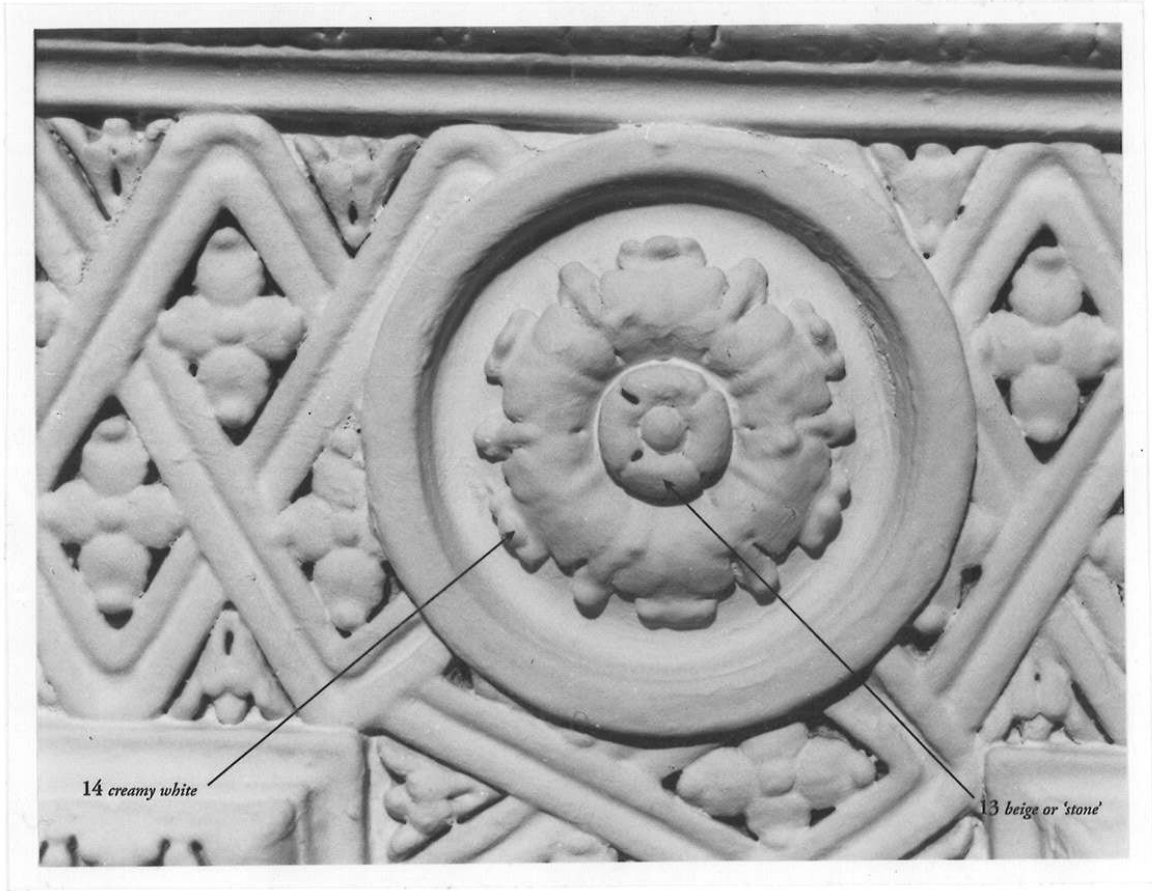
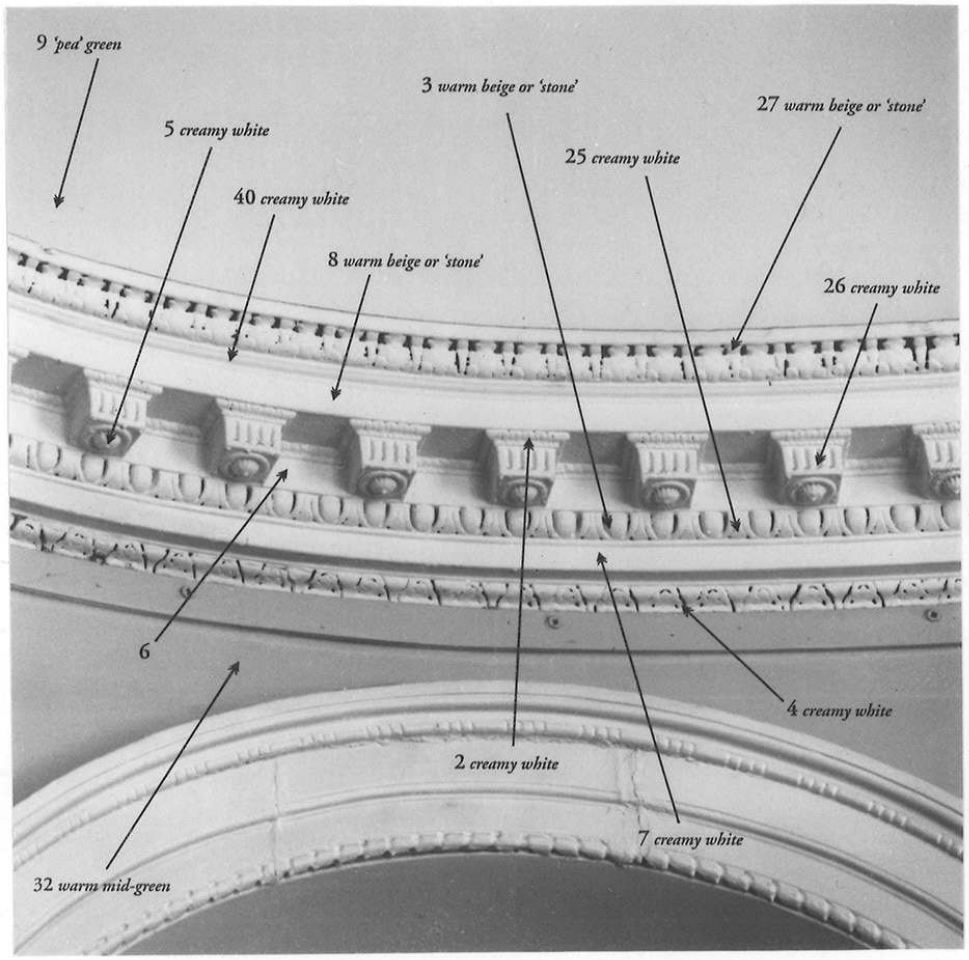


Plate 34 *(left).* Cross-section of Sample 11 taken from the tip of a petal in the wide outer lattice moulding on the ceiling. The yellow plaster substrate consisting of calcium carbonate and calcium sulphate combined with oil—is clearly visible in the lower portion of the plate. Over this the creamy white original paint layers are visible. A thick dark deposit lies on the surface of the original.

Plate 35 *(right).* Cross-section of Sample 15 taken from the background of the rosette inset in the lattice moulding. Again the yellow plaster substrate is visible with creamy white paint layers on the surface. In this sample, all subsequent phases of decoration sheared off during sample taking.
(Photomicrographs: Howard 1997)



Locations for samples 13-14.
(Photograph: Howard, 1997)



Locations for samples 2-9, 25-27, 32 and 40.
(Photograph: Photographic Department, Courtauld Institute, 1997)

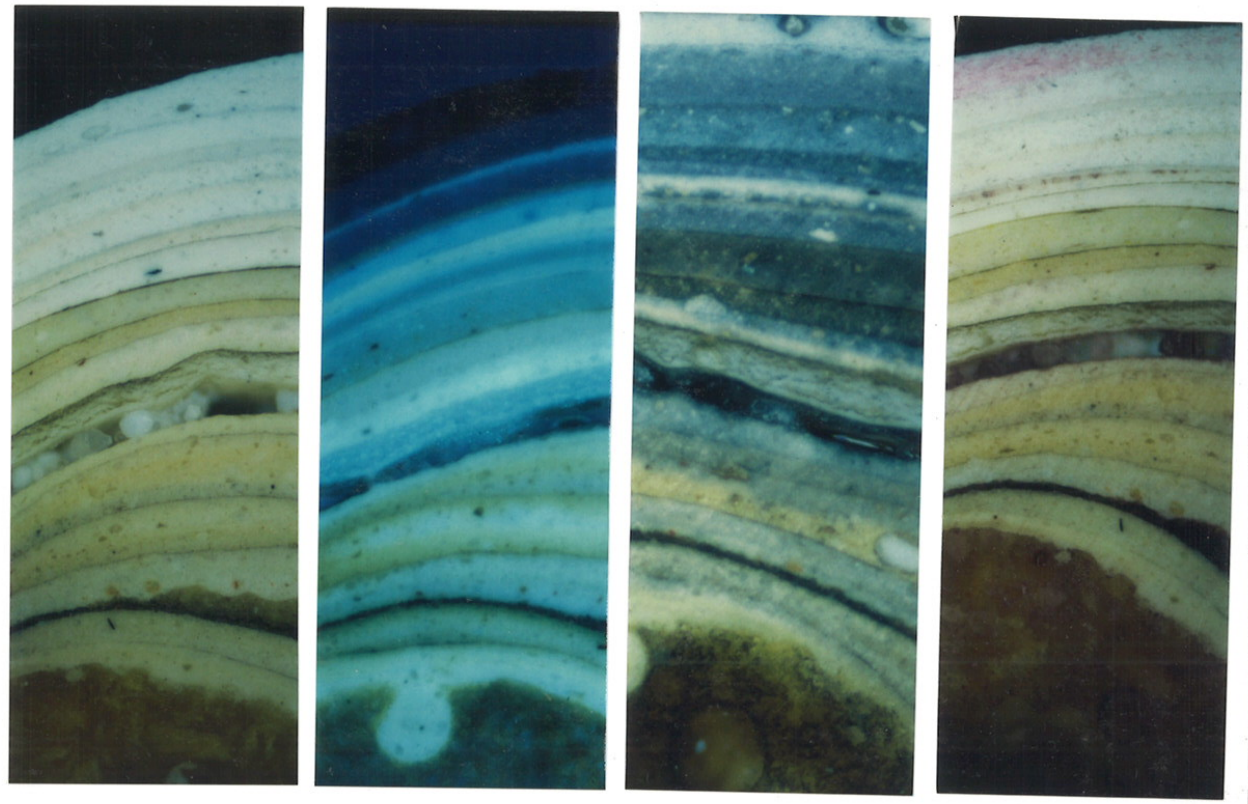
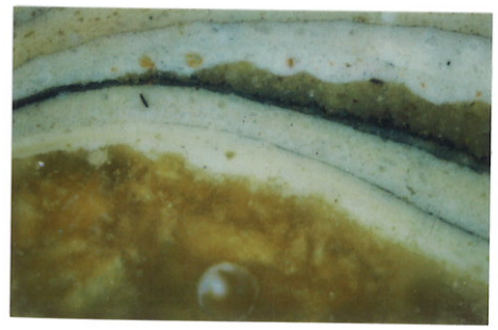
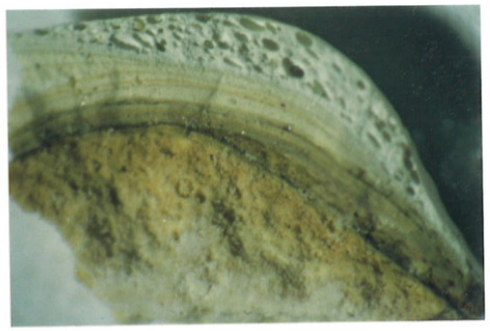
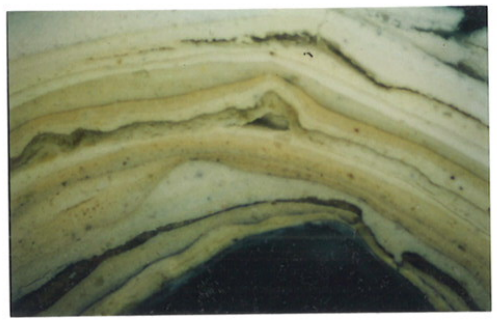


Plate 36 *(left)* Cross-section of Sample 1 taken from uppermost foliate element of the cornice. A detail of the lower portion of the sample (**Plate 37**, *below*) shows the yellow plaster support with the creamy white original paint layers, and a layer of dirt on the surface. Plate 36 shows the numerous phases of redecoration—mostly in white, beige or a creamy yellow colour—of total thickness 1500 μm (1.5 mm). **Plate 38** *(centre left).* Cross-section of Sample 1 photographed in UV light. The dirt layers which terminate each phase of decoration show up particularly clearly in UV light, as does the original paint layer which fills pores or air bubbles within the plaster substrate. **Plate 39** *(centre right).* Cross-section of Sample 1 stained for oil with Sudan black B. The plaster substrate, original paint layers and the majority of the phases of repainting have an oil-based medium. **Plate 40** *(right).* Cross-section of Sample 1 stained with sodium rhodizonate, which produce a pink/ purple colour in the presence of sulphate ions. The test clearly indicates that the plaster substrate contains sulphate—likely to be in the form of calcium sulphate— and that the uppermost emulsion paint also contains sulphate ions, here likely to be in the form of barium sulphate.
(Photomicrographs: Howard 1997)







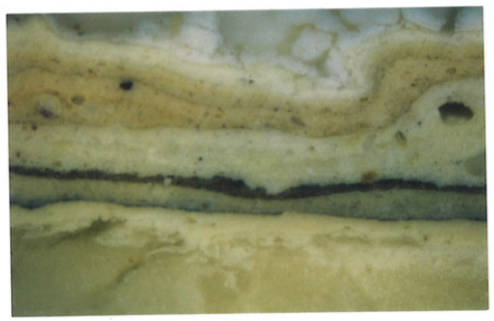


Plate 41. Macrophotograph of Sample 11 taken from the lattice moulding on the ceiling. All decorative plaster details are made from the porous, yellow-coloured plaster substrate shown here, with multiple paint layers on top. The plaster consists of calcium sulphate combined with calcium carbonate and oil and is therefore susceptible to damage following application of all types of both solvent and water-based paint strippers of the type employed to test the possibility of thinning the layers of overpaint to enhance the appearance of the plaster mouldings. The most recent layer of white emulsion paint is clearly visible at the top of the plate. It is extremely porous and is as much as ten times thicker than other paint layers in some places. The average thickness of other paint layers is approximately 50 μm (0.05 mm) while the most recent paint has been applied in a layers up to 550 μm (0.55 mm) or more thick.

Plate 42. Cross-section of a Sample JB6/2123, taken from the cornice following one application of Leyland All Purpose Stripper. It is evident that the majority of the uppermost modern white emulsion paint layers have been removed from the surface.

Plate 43. After three applications of the Leyland stripper (the overpaint has been removed almost down to the dark brown (probably an early 19th-century paint layer). In both cases however, all of the paint layers, including the original, together with the plaster support itself were softened to the extent that severe disruption and contortion of the layers is evident. The plaster could be cut like butter during sample taking and was extremely susceptible to accidental damage and manipulation.

(Photomicrographs and macrophotograph: Howard 1997)

ANALYSIS TWO: WALL SCARS

The Café space is enclosed by Flemish bond brickwork laid in lime/sand mortar dating from the original Chambers building. The brick is London stock, with some soot blackening to the mortar still visible, indicating that this was an open court. Contemporary brick columns divide the space into built-in seating and support the ring beam to the glazed steel roof and create a form of Aula. No historic decorative surfaces are present, during the Café construction brick cleaning using pressure washing appears to have taken place, in some areas taking the external face of the masonry away with the soot.

1 Chambers brickwork, registering the procession of artworks since the Café adopted the walls.

2 Column brickwork, laid in sand/cement, the even colouration attempts sympathy with the Chambers walls. The fixings do not discriminate between original and contemporary.

3 Chambers brickwork,
xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx

Since the exterior was reclaimed as a café, the inhabitants of the Courtauld have used the walls as a gallery, the fixings for every picture that has ever been hung on these walls remain visible as scars - decades of purposeful, curated interventions that have left a random field of holes that this installation adopts as a register of the life of the Courtauld. The fixing points for the art of others has initiated a process of connection using hair like threads to generate a physicality in space.

The act of connecting these scars is randomised further through the integration of digitally generated nodes that allow the threads to shift their trajectories, creating a dialogue between the artworks previously located on these walls, and the new spatiality created by this Biennial intervention.

PROCESS

Gilles Retsin 2016
Text to cover the process of generative modeling for the nodes:

Where computational research in architecture initially started out with a deep interest in curvature, continuity and gradual change, new research understands computation as fundamentally related to the concept of the discrete and distinct. This shift from the continuous field to the distinct object is profoundly linked with the nature of computation and information, which can in the end be broken down to the calculation of a single bit or unit. Computational processes like Finite Element analysis, cellular-automata, agent based systems and object-oriented programming languages are fundamentally based on discrete units rather then continuous wholes. Object-Oriented programming is a programming paradigm that translates concepts as objects that have specific methods to interact. In programming jargon: the agency or behavior of a class. Graham Harman and Levi Bryant talk about objects wrapped inside of other objects. Every object is understood as composed of multiple other objects or parts. In "The Democracy of Objects", Bryant introduces the concept of mereology; the philosophy of part-to-part and part-to-whole relationships. Mereology

proposes that an object can never be reducible to its parts, but the parts are also not reducible to the whole. Levi Bryant describes this as strange mereology " parts are not parts for the whole and the whole is not a whole for the parts" The concept of strange mereology leads to the general idea that there is no continuity, or overall whole, no super object or super structure.

On his blog larvelsubjects.com, Levi Bryant describes his own philosophical work, in particular the book "The Democracy of Objects", as a form of bricolage. Indeed, the book is eclectic and heterogeneous, an assemblage of Deleuze, Luhmann, Lacan and Harman. For Bryant, bricolage loses the negative connotation and becomes a rich concept. Bricolage is the attempt to forge heterogeneous matter into a consistent object. From initially unrelated parts, a whole object emerges. The bricoleur works with matter, with the material infrastructure available. "everything can only work on the infrastructure it has and the materials – cognitive, material and affective – that were available to it." In a non-bricolage process, there is a predefined whole which is assembled out of perfectly fabricated, highly customized parts. These customized parts would have no existence outside of the whole – they are reducible to the whole. In bricolage however, as a strange mereology, there is initially no whole – there are only parts. There is an internal resistance and autonomy in the parts, a reluctance to be wholified into an overarching object. This is where the material - realist grounding of the bricoleur comes in. A bricoleur is fundamentally materialist, as he has to somehow battle and negotiate with the material infrastructure of the parts he wants to wrap into one object.

Within a framework of strange mereology and bricolage, computational power is not invested in the subdivision of an object, but in the process of formation as a messy assemblage of objects into an " emergent object". The project for the Courtauld cafe investigates this approach by introducing multiple competing logics into one installation. On the one hand there is the initial mapping of "scars" or holes in the brickwork, left by previous biennials or other events. On the other hand, there is the physical behaviour and agency of the fishing wire. Lastly, a series of discrete, node-like objects introduce an autonomous logic in the system that prevents a single logic to develop. The holes in the wall can not simple be connected with the threads. The threads can not simple follow their own behavior. The nodes interrupt the linear interaction between holes and wire, introducing a complex, messy disturbance in the system. The resultant installation is not a predefined form, which has been carefully reconstructed, but the result between the interaction and negotiation of different design agents. This process results in a geometry that is inexact, broken and seemingly messy and unpredictable. The parts are not reducible to the whole.

This process is not to be confused with collage. In collage, different elements don't react to each other, but rather cut and slice through one another. In a bricolage, the objects actually develop a defined mode of interaction, an agency or behavior. In collage, there is no interaction on the level of the objects constituting the composition, which happens which happens hierarchically above the parts, on the level of the whole. In the Courtauld installation, computing is not anymore a continuous single process or meta-computational process, meant to generate a whole. The computational approach becomes a high-resolution, high-entropy assemblage of discrete elements into emergent objects.

Advances in manufacturing generate a new possibility for architecture to become truly information dense and heterogeneous. To fully access the potential, it is crucial to develop a new design methodology that is inherently heterogeneous and capable of capturing large sets of information density. Instead of a continuous meta-process, a workflow celebrating discreteness and assemblage might enable designers to fully harness the potential of heterogeneity embodied in new printing technologies. The proposed design method or framework is based on a computational understanding of Object Oriented Ontology, where classes or objects become autonomous entities that can interact with each other to assemble into a heterogeneous substance.

Exhibition

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