

Church of St Nicholas and St Cyriacus,  
South Pool, Kingsbridge, Devon

Chancel Rood Screen Polychromy  
Pilot Project Report

December 2012  
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## **Background**

I returned to the church of St Nicholas and St Cyriac in South Pool between 10-14th September 2012, in order to carry out a pilot project on the polychromy of the chancel rood screen. This followed on from recommendations outlined in my report dated November 2011. The pilot project looked at the four main issues, the brown wax, the stabilisation of paint in the aftermath of caustic soda treatment, the removal of remaining overpaint and consolidation of loose paint.

## **Summary of pilot project**

Much time was spent investigating the cornice, which had not been easily accessible previously. A little time was also spent looking at the northernmost bay of the south aisle screen, although the aisle screens were not part of the present brief.

Work consisted of:

- Dusting and vacuuming, with particular attention given to the cornice.
- Removal of bat's droppings.
- Logging extent of brown wax and carrying out cleaning tests.
- Checking over beeswaxed unpainted wood.
- Ascertaining whether or not it is possible to remove the remaining overpaint.
- Consolidating loose paint and crumbling pockets of wood revealed during cleaning tests.
- Continuing neutralising caustic soda.
- Paint sampling for analysis.

The following pages summarise the issues and discoveries of the pilot project. More detailed information, accompanied by illustrations follows.

## **Summary recommendations**

Previous concerns, notably the inherited problems of the caustic soda treatment appear to have been largely addressed and it is now possible to move forwards.

The next priority is to remove as much of the brown wax as possible. It is soft and sticky in consistency and will attract dust, becoming increasingly obtrusive in time. However, the various elements presently camouflaging the medieval decoration are all interconnected. I therefore suggest that a holistic approach should be adopted and the screen treated bay by bay, working from the top down.

Starting with wax removal or reduction and consolidation of loose paint, overpaint islands should be removed where this can be achieved without jeopardising the medieval paint. If this cannot be done, after the application of an isolating layer, the white islands should be toned out in a reversible medium. This would reduce their distraction and allow the painted surfaces to dominate. This treatment of the overpaint would be far safer in terms of Health and Safety as well as quicker.

Any pockets of paint that need further stabilisation could be picked up on during these processes and treated accordingly. Paint would finally be varnished and bare wood given a protective coat of microcrystalline wax and buffed to a soft sheen.

## **The Issues**

### **Caustic soda**

Previous visits to South Pool had been to deal with the aftermath of a caustic soda treatment carried out in 1952. At this period soda was widely used by ecclesiastical craftsmen to remove overpaint. At South Pool, a grey stucco paint probably dating from the eighteenth-century, had been applied over the medieval decoration. Large areas of original paint were uncovered reasonably successfully, but islands of overpaint remain (see below).

The indications from the pilot week are that the paintwork is stable and that the caustic soda is not being re-activated. It appears as though the repeated neutralising sessions, carried out by Anna Hulbert and myself in the mid 1990's and later by the parish under Anna's supervision, has been effective. It is likely however, that methodical treatments across the screen to deal with elements itemised below will reveal localised pockets that need further stabilising.

Although it was not part of my brief in the pilot project, some time was spent looking at the dado of the south aisle screen and further neutralising of soda may be required here. See overleaf.

### **Wax removal**

As things stand, the brown wax has become the main, most pressing issue to address. Wax was observed across the whole screen, even on the cornice. The brown wax, applied sometime between 1994-2011, is unevenly applied; it is soft and sticky in consistency and will attract dust, becoming increasingly obtrusive in time.

Small cleaning tests established that the unsightly thick clogging deposits of wax can be removed and the coating elsewhere can be reduced, depending on the underlying surface.

On unpainted wood, beeswax was applied according to Anna Hulbert's 1994 recommendations. These waxed surfaces look grey, dusty and opaque and in places are flaking. It is also possible that in places the soda needs further neutralising.

Tests were carried out to see if the beeswax could be re-buffed but this was not consistently successful as this did not address the issue of the flaking wax. Even where it is not apparent, cleaning may indicate its existence and the wax should be reconstituted or removed where it is flaking. The painting beneath will be revealed in greater clarity after treatment. In due course, microcrystalline wax should be applied instead of beeswax.

### **Overpaint removal**

The eighteenth-century overpaint was removed with very variable results by the caustic soda in the 1950's. Below the transom the polychromy has for the most part been uncovered, though pockets of grey overpaint in the carved foliage trails contrast strongly with the expanses of intact rich medieval colour. This causes the original painting to appear more muted and less saturated, whilst the presence of overpaint in the tracery backgrounds results in a loss of clarity to the carving.

The painted panels, which South Pool is so famous for have largely been uncovered. Whilst some of these have survived well others, such as the paintings on the Bay 3 doors, have been very damaged.

Tests carried out by Anna Hulbert in 1994 indicated that at this time the overpaint could be removed, but that work was extremely slow. In the pilot project, tests were carried out to see if it is possible to remove the remnants of overpaint without jeopardising the original paint beneath. These tests revealed that whilst in places the overpaint is chalky and easy to remove mechanically, for the most part it is extremely tough and can only be removed with repeated applications of strong solvents to soften it, followed by mechanical removal. It is likely that the lead white has become harder and more brittle in the last twenty years since Anna carried out her cleaning tests.

### **Loose paint**

Isolated pockets of fragile paint came to light during cleaning and these need to be consolidated as they are found.

### **Cornice**

Much of the cornice is original, although the top cresting and the middle foliage trail are a 1952 Herbert Read replacement, as is much of the lower foliage trail. Painted and unpainted wood, original and replacement, are in need of a methodical surface clean to remove ingrained dust, although certain sections of new wood remain well sealed and protected. However, much of the beeswaxed replacement wood of 1952 needs more thorough cleaning as the wax is flaking.

More importantly, the brown wax highlighted in the 2011 report on the lower levels, was found to be applied extensively across the cornice on painted and unpainted surfaces. In particular, the lower foliage trail and the main running ornament are heavily waxed, particularly at the north end.

### **Aisle screens**

The aisle screens were not part of the present brief but a little time was spent looking at the dado of the northernmost bay of the south aisle screen. Although sections of this screen, such as the vaulting are Herbert Read replacement, it successfully incorporates sections of the original screen, though the polychromy is only fragmentary.

The woodwork here looks very dull and is deeply impregnated with dust. The beeswax has largely broken down; it is flaking and has become opaque.

Trials were carried out to see if the surface could be buffed to re-constitute the beeswax. This was unsuccessful and after dry dusting, a quatrefoil was cleaned using white spirit and later, once the white spirit had dried, given a coat of microcrystalline wax. After buffing, it was possible to see areas where opaque deposits of beeswax still remained. Such corners were cleaned more thoroughly, paying attention to remaining fragments of polychrome.

### **Analysis**

Analysis was carried out by Lucy Wrapson of the Hamilton Kerr Institute, Cambridge University, building on the work carried out in 2011. Eight new samples were taken during the pilot week. All were from the cornice, which had been previously inaccessible. Further analysis has clarified the presence of two yellows on the dado, with lead-tin yellow mixed in the greens (sample 4) and orpiment on the yellow bosses (sample 3).

Samples were set in polyester resin and polished to reveal the cross-section. Examination and reflected light microscopy was carried out on a Zeiss Axioskop™ microscope. Observations about layer structure and material content were made at 200 and 500 X magnification, and UV fluorescence was observed and photographically recorded.

Of particular interest is the discovery that there are two decorative schemes. The presence of azurite over gold on the vine trail stems is unusual as it is not a glaze, but an opaque pigment. This suggests that it might be an early overpaint and is a fascinating discovery. Its presence on the stems however is a characteristic feature of the best cornice polychromy, although not usually over gold.

Close inspection and analysis of the cornice also indicates that there is a dark blue-black over the gold on the large vine leaves and on the bird's feathers, applied on a chalk-based ground. It is unclear how the cornice would have appeared in the second scheme. Perhaps some feathers or veins on leaves were picked out with this dark blue, alongside the brighter blue on the stems. It does appear however as though these dark, almost black layers were applied uniformly over different elements, though not throughout. The Aaron's rod at the south end is also painted with a dark rich colour, which analysis identifies as a dark purple. Further cleaning may provide a bigger picture.

It is unclear when this repaint dates from and if the evidence outlined above belongs to one campaign or more. There is only a narrow window of opportunity for wanting to repaint the screen before changes of fashion dictate an end to the use of colour. The presence of azurite on the stems, coarsely ground and in an appropriate location could represent a partial repaint when the Church returned to Catholicism under Mary Tudor. The darker, heavier repaint on the leaves, the feathers and the Aaron's rod could belong to a different intervention that is hard at this point to understand. The presence of azurite and red lake are not likely to be later than 17th century.

## Recommendations

Having outlined the issues above, it is clear that the needs of the polychromy are complex. Previous concerns, notably the inherited problems of the caustic soda treatment appear to have been largely addressed and it is now possible to move forwards.

The important dado paintings on the chancel screen deserve being seen to their best advantage. At present they are isolated, individual elements. The bright polychromy should extend outwards and upwards, highlighting the ornate carving and bringing the screen to life again.

After a considerable amount of thought, I suggest that a holistic approach should be adopted. Taking one bay at a time and carrying out several different processes, the various issues should be addressed according to the individual needs as they arise. A system would evolve, allowing for drying time between processes and some experimentation. Working in this manner should ease the difficulties of fund raising as the results would be apparent for all to see. The multiple processes required on the various issues should produce dramatic results.

Starting with wax removal or reduction and consolidation of loose paint, overpaint islands should be removed or reduced where this can be achieved without jeopardising the paint below. If this cannot be done, after the application of an isolating layer, the white islands should be toned out in a reversible medium. This would reduce their distraction and allow the painted surfaces to dominate.

Any pockets of paint that need further stabilisation could be picked up on during these processes and treated accordingly. Paint would finally be varnished and bare wood given a protective coat of microcrystalline wax and buffed to a soft sheen.

A look at the dado of the south aisle screen revealed that bare wood, waxed with beeswax in the 1990's, is now in need of further attention. It is possible too that in places the soda needs further neutralising. An inspection from a scaffold would be necessary before recommendations can be made here. However, it is clear that the dusty waxed surfaces need attention, as they have become opaque and in places are flaking. Where possible this should be removed and the wood given a surface clean. Allowing for drying time, further applications of diluted linseed stand oil may need to follow this, before eventually applying a coat of microcrystalline wax. This wax dries to a harder finish than beeswax, attracts less dust and is more easily reversible in the future.

It should be possible eventually to work out an approach on the aisle screens that could involve the assistance of a dextrous, careful parishioner. However, I would need to give some further attention to these screens before I could produce further recommendations.

## **Conclusion**

The presence of two or even more decorative schemes is a fascinating and unexpected discovery. It is clear that South Pool screen has many stories to tell and its rich decoration needs to be brought to life again to be fully appreciated.

As things stand, the brown wax has become the main, most pressing, issue to address. Wax was observed across the whole screen, even on the cornice. It is unevenly applied and is soft and sticky in consistency. It needs to be removed as much as possible.

The paint appears to be largely stabilised after the remedial work carried out in the aftermath of the caustic soda treatment. Localised pockets requiring further stabilisation will come to light if a methodical conservation campaign is carried out across the screen.

The presence of the thick overpaint has a two fold effect. Firstly it results in a loss of clarity to what is extremely fine carving. Secondly it causes the bright colours of the original painting to appear more muted

Much of the paint surface appears matt and rather lifeless at present, probably due to the soda treatment. This results in the exposed original paint being often indistinguishable tonally from the islands of pale overpaint. A priority would be to apply a protective varnish to the paint surface, which will not only restore lustre to the matt dead-looking surface but will provide much-needed protection.

Given the complex and varied issues highlighted in the pilot week, a holistic approach would seem the sensible way to proceed. In this way a variety of issues can be dealt with as the need arises. By treating one bay at a time, the results would be evident and dramatic for all to see which should aid fund raising. In this way I hope that it will be possible in time to bring the screen to life again and to preserve it for future generations.

## **Acknowledgements**

Analysis was carried out by Lucy Wrapson of Hamilton Kerr Institute, Cambridge University. All photomicrographs shown here are copyright of Lucy Wrapson.

I would like to thank Elizabeth Bennett for inviting me to carry out this investigation and for her support, Valerie Statters for her warm hospitality and Rosalind Page for recognising so many years ago the importance of South Pool rood screen.

Eddie Sinclair BA ACR



At present (as seen above), the rich vibrant colours of the 16th century painting are muted, in the aftermath of the caustic soda treatment, overlying remnants of overpaint and coatings of brown wax.

Whilst the dado paintings can be enjoyed individually and several retain their clarity, they are at present isolated elements, as their context does them a disservice. Localised pockets of bright colour should extend outwards and upwards, highlighting the ornate carving and bringing the screen to life again.

Paint analysis and cleaning tests reveal a vibrant polychromy throughout (see overleaf). Where paint is abraded or missing, with careful applications of either varnish or microcrystalline wax, the surfaces will be nourished, protected and legible again.



Five birds, all different, can be found on the cornice. Most are green, (see left) but one is gilded.



Barbers-pole stripes which enliven the transoms are currently barely noticeable.



Many bosses and paterae appear to have lost their colour and it is the red ochre primer that is visible. However, careful cleaning reveals many pockets of the golden yellow pigment, orpiment. This problematic pigment, composed of sulphide of arsenic, surprisingly retains its golden colour, when usually it turns brown (see left and above).

Cleaning tests, good lighting and a temporary application of Shellsol T, to represent the eventual varnished appearance, reveals extensive colour survival and decorative elements not currently noticeable.

A palette of green, red, white, yellow and black is immediately apparent, whilst blue and gold which are used more selectively would have provided rich contrasts and highlights.





Left photograph, showing north end of cornice. This appears at first glance as largely unpainted, but dust, overpaint and a matt, blached paint surface all make it easy to overlook that a considerable amount of colour actually survives here.

Ideally, the overpaint should be removed, thinned or at least reduced where this can be safely achieved. Alongside a surface clean, with bare wood nourished with microcrystalline wax and paint varnished, the appearance would be dramatically improved.



At the south end, bats droppings are more in evidence. If the unpainted wood were given a microcrystalline wax coating it would ensure that any such deposits could be easily removed in the future.



Beneath the dust and the islands of overpaint, many traces of gilding can be seen. There is also evidence of dark paint that is from the second decorative scheme. Sample 17 taken from the Aaron's rod shows a complex mix of black, azurite and red lake in a similar dark layer that must have been a dark purple.

It is clear from tests that not all the overpaint could be safely removed. A compromise would be to remove or thin as much as possible, apply an isolation layer and tone out the remaining islands.



As can be seen in the photograph above, there are solid vibrant areas of bold bright colour surviving on the cornice, visually 'lost' by the presence of the grey overpaint.

### Cornice Details

Although the painted panels have largely been uncovered, islands of overpaint remain throughout the screen extending across the cornice.



Section of dado, Bay 5, cleaned and varnished.

Within this area, all processes were carried out: surface cleaning, removal or reduction of brown wax, removal of islands of grey overpaint and consolidation of fragile wood. Painted surfaces were varnished with a dammar resin/ cosmolloid wax varnish, after the application of Paraloid B72 as an isolation layer. Unpainted wood was given a coating of microcrystalline wax and buffed to a sheen.



The brown wax highlighted in the 2011 report extends across the whole screen, including the cornice, on painted and unpainted surfaces.

As can be seen in these photographs, the lower foliate trail and the main running ornament are heavily waxed, particularly at the north end.

It is a priority to remove as much of this wax as possible and this is best achieved by the use of solvents, after the thick bulk has been removed by mechanical means. It is unlikely that all wax will be removed, but the appearance can be improved considerably.



### Cornice Details



The dark new wood stands out strongly against the muted paintwork. It is therefore easy to miss the fine detail, in the carving as well as the painting.

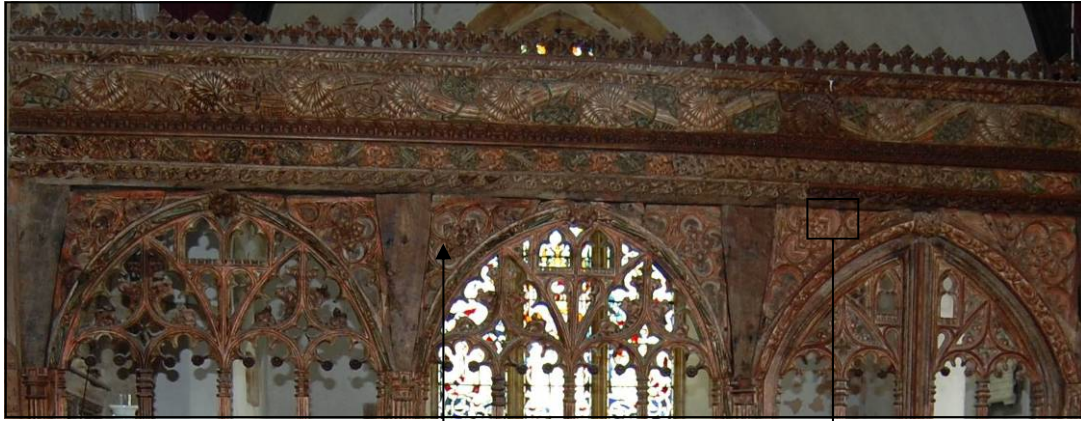
Most of the birds on the cornice are painted in opaque colours, with apparently only one that is gilded. Detail top right shows how dusty, lack-lustre and lifeless the paint surface presently appears. Detail above right: although there are still islands of overpaint here, the surface has been saturated to show the quality that the medieval paint should have.



Close observation of the grapes reveals many traces of jewel-like glazes. As can be seen in these photographs, the deep corners of the carving are still clogged with overpaint as well as dirt. Cleaning and removal or reduction of the overpaint would be very worthwhile here.

Tests carried out on individual grapes show how successfully they can be cleaned





Sample 9



Sample 9 taken in 2011, showed azurite in the backgrounds of the vaulting panels (see above). Over the azurite lies a red ochre layer (above right) that may be an undercoat for the grey stucco overpaint.

These vaulting panels would benefit considerably if the complex mess of overpaint fragments could be tidied up.

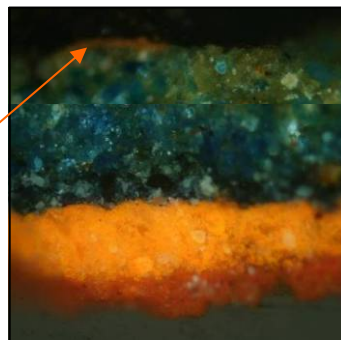
The presence of azurite and perhaps its first occurrence on South Pool screen is at high level, towards the rood, which is where the most costly and precious materials were used.



During the pilot project, tests were carried out to see if the red ochre overpaint could be removed safely. It was found to be more easily removed than the grey overpaint, with dramatic results.

Although in many cases the azurite survives in a fragmented state, as can be seen above, there are places where it survives almost intact.

The photomicrograph of sample 9 (see right) clearly shows red ochre overpaint above the azurite.





Many cleaning tests produce subtle results, but carried out over large areas will have a pronounced effect (see above and below).

Traces of bright gilding are revealed beneath the dusty surface of the crockets (left).



The lower tracery is in particular need of attention. Many corners are in need of consolidation at this level. Cleaning, consolidation and eventually varnishing or waxing will restore the correct balance to the dado panels



Very little paint survives on the south aisle screen as it was stripped with soda at a time when no-one thought to retain the polychromy.

Much of the wood here appears grey. There is a two-fold reason for this. Close observation of the surfaces reveals that the beeswax applied in the 1990's has become impregnated with dust and become opaque. In places it is also flaking (see below left). It is also possible that in places the soda needs further neutralising.

Tests were carried out to see if the beeswax could be re-buffed but this was not consistently successful as this did not address the issue of the flaking wax.



flaking beeswax

Test (top left), after feeding 3% dilute linseed stand oil into blanching wood and mopping surface. Photograph bottom left (arrow) shows area once it has dried.



Bay 1 dado.

Above, overview after quatrefoil test and above right close-up. The wood here was dusted and cleaned, using white spirit. Once dry the wood was given a coat of microcrystalline wax and buffed to a soft sheen. This will protect it from dust and enable such things as bat's droppings to be more easily removed. Fragments of surviving polychromy will come to light during this process and can be treated as necessary.

## South Aisle Screen



Cornice: Bays 1 and 2

Location of paint samples 10-15



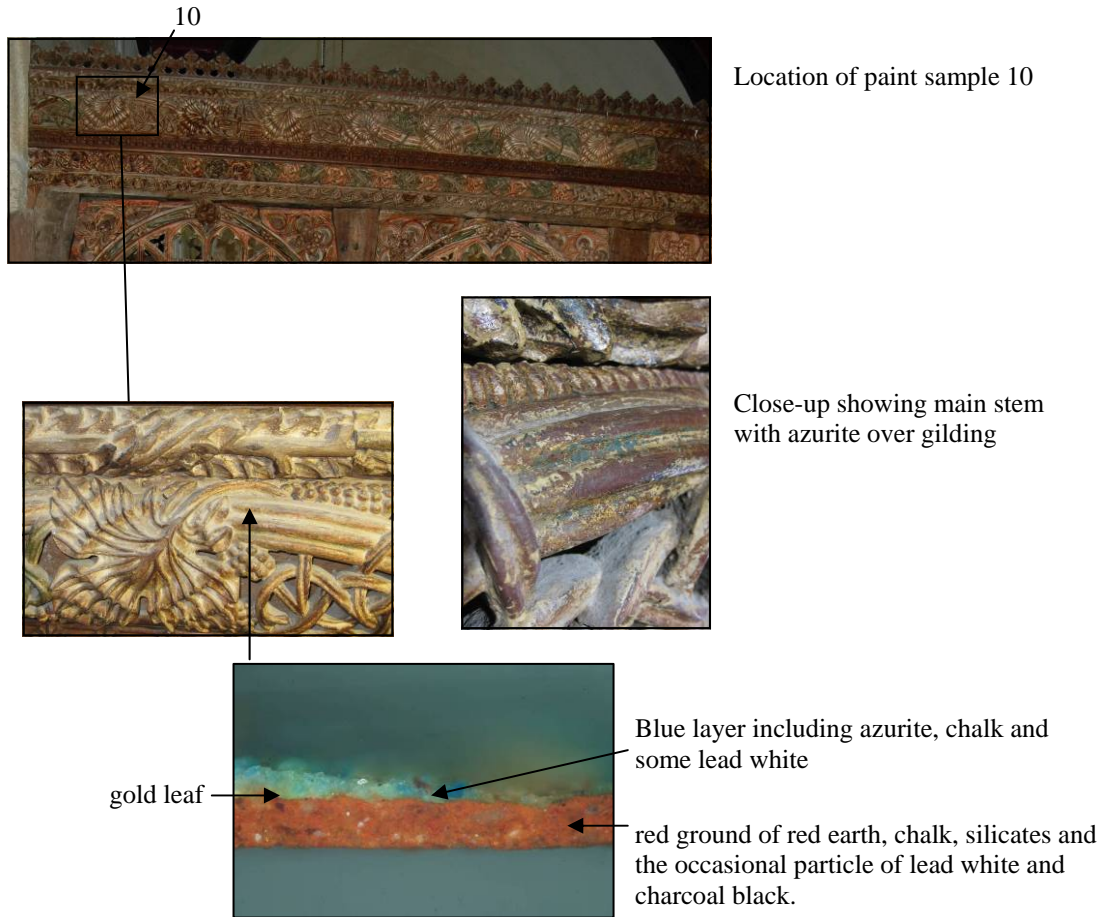
Cornice: Bays 3-5

Location of paint samples 16-17

Paint samples 1-9 were taken in 2011. Samples 1-4 and 9 were taken from below the cornice which at this stage was not accessible. Samples 5-8 were taken from the newly discovered soffit carving.

Location of paint samples





### Photomicrograph of sample 10

x200

Above normal light. Below, left, bright field image, to show the gold layer. Below right, UV examination indicates that the lower part of the sample is more fluorescent, perhaps due to medium separation, or because the red was applied in two layers, not visible in normal light.

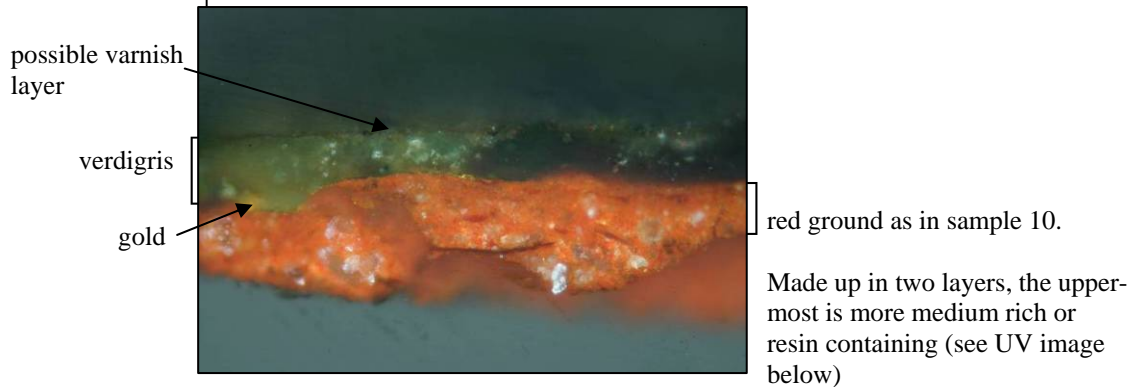
Ultra violet fluorescence also highlights possible varnish layer



It is unusual to find azurite over gold leaf, as it is not a glaze, in other words it is an opaque pigment. This suggests that it might be an early overpaint and is a fascinating discovery. It is possible that it represents a partial repaint when the Church returned to Catholicism under Mary Tudor. Its presence on the stems however is a characteristic feature of the best cornice polychromy. As can be seen overleaf (see sample 12) other samples also showed evidence of an early re-decoration.



Location of paint sample 11



Photomicrograph of sample 11  
x200 Normal light  
Green lustred grapes



x200 Bright field, to show gilding



x200 UV, showing fluorescing medium



Detail of cornice with gilded bird. Sample taken from feather of bird



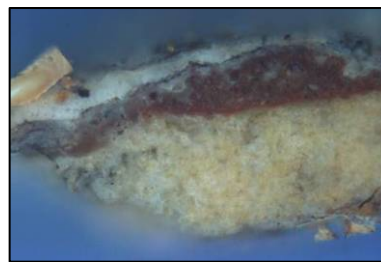
Location of sample 12. This consisted of two paint fragments with very different information, mounted as 12 and 12 b. (see below).



Photomicrograph of sample 12  
x200 Normal light

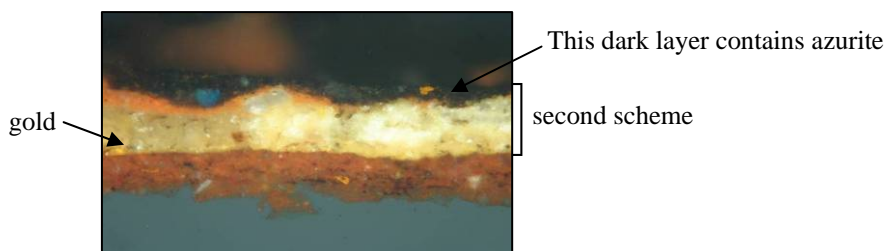


x200 Bright field



x200 UV

These samples clearly show that there are two decorative schemes. The original layers are fragmentary in sample 12 but present in sample 12b (see below). Both show the original gilding as seen in samples 10 and 11 (previous pages). The indications are that the second scheme is probably early.



Photomicrograph of sample 12b, second fragment of sample 12  
x200 Normal light

It is unclear how the bird would have appeared in the second scheme. Perhaps some feathers were picked out with this dark blue, whilst others were left as gold. Further cleaning may provide a bigger picture.



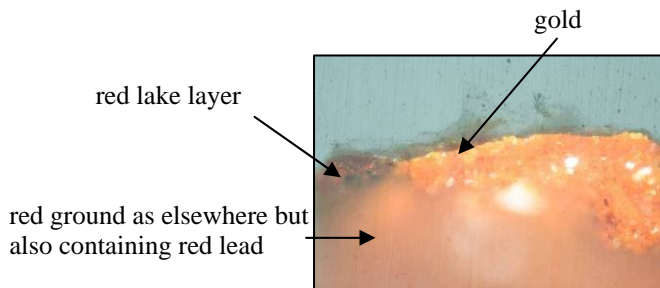
Location of sample 13, north end cornice



Four layers of synthetic copper greens mixed with varying degrees of lead white or possibly lead tin yellow.

Red ground: this contains red earth, red lead, chalk, silicates and the occasional particle of lead white and charcoal black.

Photomicrograph of sample 13  
x200. Normal light  
Opaque green grapes

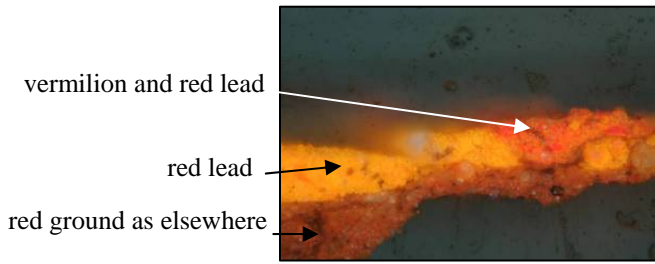


Photomicrograph of sample 14  
x200. Normal light  
Crimson lusted grapes



Two different techniques are used to decorate the grapes on the cornice. Opaque colour, as seen in sample 13 above, or translucent colour applied as a glaze over gold as seen in sample 14 here and in these partially cleaned grapes (see right).



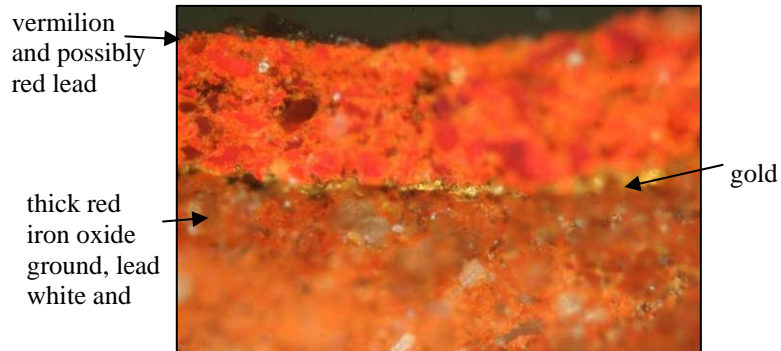


Photomicrograph of sample 15  
x200. Normal light

Opaque red grapes, same bunch as sample 13



A comparison of sample 13 with sample 6, taken from the soffit (see below), reveals certain similarities. It should be noted that if the soffit originally came from the rood loft, then it could have been through the same relatively early repaint that seems to have taken place on the cornice nearby.



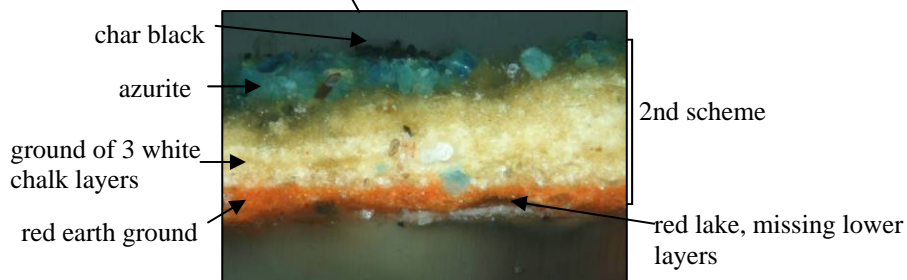
Photomicrograph of sample 6  
x200



Location of sample 16 taken from Bay 5, south end of screen

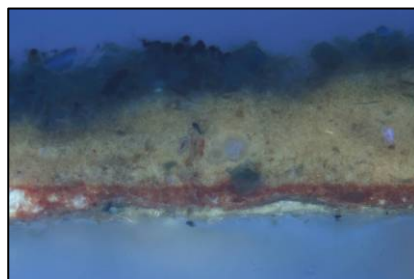


Detail of Aaron's rod and location of sample 16. As can be seen in this detail, the painting here is a complex mix of layers from different decorative schemes. The blue and the black decoration seen on the carving above are clearly visible in the cross-section seen below.



Photomicrograph of sample 16, taken from Bay 5, south end of screen x200. Normal light

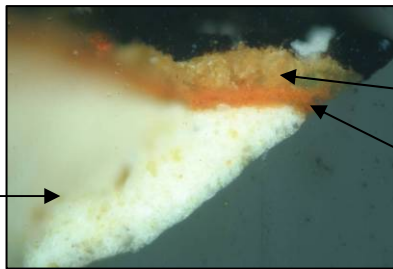
As with samples 12 and 12b, sample 16 clearly shows evidence of repainting. The bottom layer, which appears to be red lake, could have been a glaze for gilding or it could in fact be a remnant of a varnish for the original decoration. Either of these could explain the fluorescence seen in ultra-violet light in the photomicrograph below. All the layers above this belong to the repaint and second scheme.





Aaron's rod at south end of screen appears to be painted differently to that elsewhere

lead white, yellow ochre and chalk.



'black', consisting of a char black, red lakes and a little azurite.

yellow, ochre?

red ochre

Photomicrograph of sample 17, taken from Bay 5, south end of screen x200. Normal light

Sample taken from the Aaron's rod, where a gritty black was observed. Analysis identified this as a dark purple, consisting of a char black, red lakes and a little azurite. Unlike sample 16 (previous page) there is no distinct azurite layer visible below. With such small paint samples however, its absence in a sample may be because it is incomplete as the layers below may be fragmented. This section of Aaron's rod does appear to be different and removal of overpaint might provide further fascinating information.

