

## **Orthodox icons at The British Museum: An approach to ethical conservation practice**

### **Keywords**

Icons, preserving  
context, ethical  
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*Figure 1 St Nicholas  
(1994,0102.1) before treatment.*

### **Introduction**

The British Museum holds a collection of around one hundred Greek and Russian wooden painted Orthodox icons, the majority of which were acquired in the 1980s and early 1990s. Although part of the museum's collections these objects are documents of a living culture and so consideration must be given to the preservation of physical evidence of that culture. The museum must also exercise its duty of care through research and conservation, to preserve the icon collection for future generations. A recent survey of the collection undertaken by conservators of the Department of Conservation, Documentation and Science revealed that a number of the icons are damaged both structurally and visually, and require conservation. This prompted the development of a cross-disciplinary research project involving conservators, scientists and curators to investigate how best to treat the icons to preserve both their physical state and the intangible nature of their spiritual context.

The aim of this paper is to reflect on the challenges that the physical condition and spiritual context of Orthodox icons pose to conservation

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principles and practice, both as liturgical objects and as representatives of a world culture included in the Museum's collection. This paper will also present elements of the research project. It is not within the remit of this paper to give full details of analytical results and conservation treatments. These will be provided in a future publication.

### **The icon in a museum context**

#### Preserving context and spiritual significance

The museums and collections in which many Orthodox icons are now found have an ethical responsibility for their care and preservation. When icons are removed from a church context and incorporated into a secular collection, the preserved physical evidence of use continues to illustrate their sacred origins. For example, splashes of beeswax found on the surface of an icon are a consequence of veneration with candles during liturgy and lipstick residues provide evidence of the intimacy of physical contact between the icon and congregation (Gasque 1988).

The British Museum has an additional responsibility to maintain the icons in a state that permits their study and that of the culture they represent. Icons intrinsically retain their spiritual function as long as their structure and image are intact. It therefore becomes the responsibility of both the conservator and the museum to maintain a balance between the physical integrity of the icon and the preservation of evidence of use. This secular approach to care and conservation must be balanced against the intangible spirituality of the icon. No

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practicing member of the Orthodox Church would consider icons as 'historical objects' (Pietarinen 1998) rather as useful tools, a means to transcend the physical, as Gasque (1988) states:

*The affirmation of the eternal truth and intelligibility of a spiritual world defines and shapes the entire form and content of icon painting.*

### Conservation challenges

Every icon challenges both the conservator and the principles of conservation in many ways. Traditional manufacturing techniques are governed by sacred canons (Ware 1963; Quenot 1987) and follow sets of written instructions in *Hermenia* and *Podlinniki* (iconographers handbooks and manuals) (Hetherington 1974; Sandler 1981). While fulfilling spiritual requirements, icons are intrinsically prone to deterioration through ageing; the wood panels split and the oil varnishes darken. Damage is caused through use, by being handled, scratched and burnt, or by structural alterations including attachment or removal of metal additions. Surface residues that accumulate through use in liturgy, including wax, lipstick and oil from lamps, are detrimental to the stability of the paint and varnish layers (Pietarinen 1997).

Icons are subject to multiple re-workings to repair damage to allow continued ecclesiastical use, through re-painting, varnishing and sometimes re-gilding. Dionysius of Fourna (AD1670-1745/6) in his *Hermenia* instructs iconographers to 'repair anywhere that the colours are damaged' (Hetherington 1974,p.10). Particular elements and features are considered intrinsic to the icon's function, such as clarity

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of the face and hands, a visible inscription and discernible red border (Robinson 1996). For continued use in the church, these elements were cleaned and repaired, in extreme cases scraping down the image to the wood and repainting to restore the *icons* '*spiritual and philosophical meaning*' (Zalkalne 1995,p.87). This re-working can confuse the interpretation of the surface to be conserved. For example, an icon may have undergone extensive cyclic re-painting of the image. The over-paint may extend over areas of the original image, but however inexpertly executed, this was done to facilitate continued liturgical use. In the museum context, if it is discovered that the over-paint obscures original layers and is actively deteriorating, it is not necessarily an appropriate conservation decision to remove the disruptive layers. The existence of the over-paint can be interpreted as contextually significant as the original, to both the icon and the museum.

Once removed from the original church context, icons are often subject to further alteration or deterioration related to their new secular context, both before and after they reach a museum or collection. These alterations may reflect the values of the western art market (Pinder 1999). Changes in environmental conditions may promote deterioration. The conservator, in liaison with others, must weigh up the different qualities of the icon and how best to preserve it in the museum context. The challenge faced by the museum conservator is to apply appropriate judgement to the current context, based on an informed understanding of previous history of production and use.

The aim of the conservator must be to establish the condition of the icon through research and analysis (Espinola 1987; Lelekova 1996; Milanou 1998,p.81-82) and use this information to develop a treatment

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strategy that strikes a balance between the need to stabilise the physical structure of the icon, the desire to preserve its spiritual function and the role of the icon in the museum as a document of Eastern Orthodox activities. (Bobrov 1996)

## **Research project**

### Aims and objectives

As a result of the survey of The British Museum icon collection and the realisation that a number of the icons are in need of conservation, a collaborative research project was undertaken. The aim of the project was to establish an informed methodology for the examination and conservation of the icon collection, which addressed the core values of the icons, their physical, spiritual and visual integrity. Four icons representative of the collection's content and condition were chosen for study (table 1).

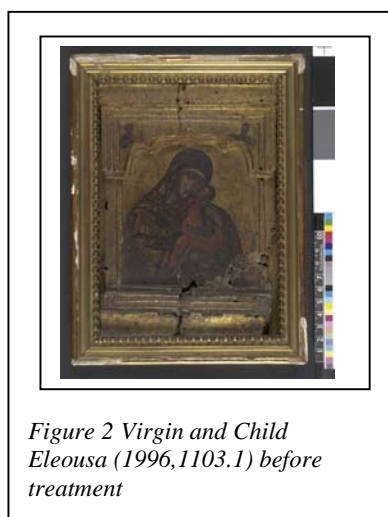
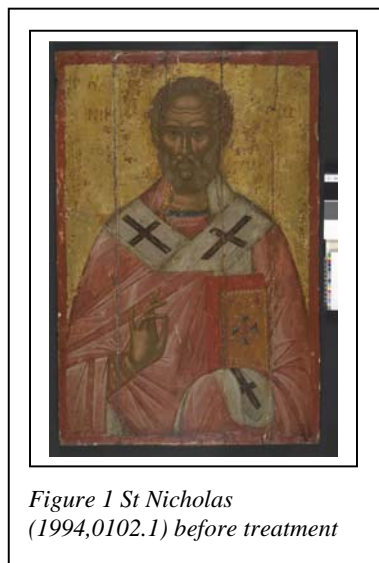
The main objectives were to:

- Identify original materials and conservation residues present
- Identify the cause of damage both structurally and visually
- Establish a chronology of events in the history of the icon
- Develop an informed conservation strategy

To achieve this, technical analysis of the materials present was undertaken. The results were combined with detailed physical examination and previously published technological and historical research into the manufacture, use and conservation of icons (Jolkkonen et al 1998; Jolkkonen and Nikkanen 2001; Espinola 1987)

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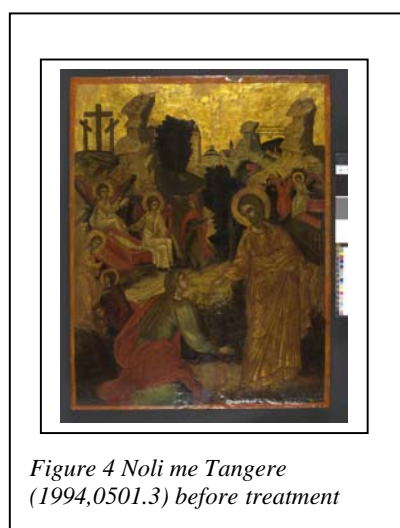
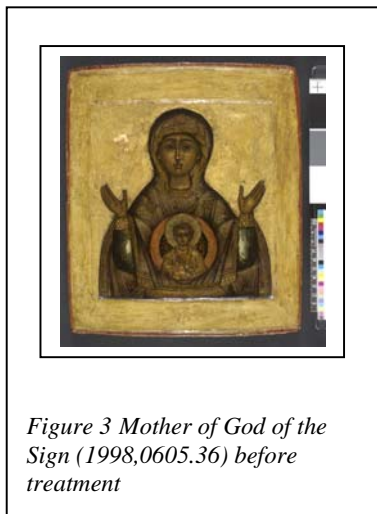
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Icon (BM reg.no.)	Description	Condition
St. Nicholas 1994.0102.1  (Figure 1)	Early 16 <sup>th</sup> century, Crete. Paint, gilding and gesso on wood. 8500 x 5500mm	<ul style="list-style-type: none"> <li>Panel warped, old repaired damages and splits. Original reverse battens replaced with auxiliary support, causing new damage.</li> <li>Paint surface flaking with previous loss and damage; remains of previous restoration.</li> <li>Grey, dull surface coating.</li> <li>Disrupted appearance to image.</li> </ul>
Virgin and Child Eleousa 1996.1103.1  (Figure 2)	17 <sup>th</sup> century, Greek. Central panel of a triptych. Paint, gold and gesso on wood with carved integral frame. Mounted in a later gilded frame with backboard. 200 x 140mm	<ul style="list-style-type: none"> <li>Panel weakened by woodworm damage, central vertical split, failing old repair.</li> <li>Paint surface damaged by wear and previous cleaning, gilding and gesso pitted and abraded.</li> <li>Old dark varnish</li> </ul>

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		partially removed, exposed surface ingrained with dirt. <ul style="list-style-type: none"> <li>• Later gilded frame damaged and flaking, backboard split and failing.</li> </ul>
Mother of God of the Sign 1998,0605.36 (Figure 3)	17 <sup>th</sup> -19 <sup>th</sup> century, Russian. Paint and gesso on wood, two sliding reverse battens. 309 x 269mm	<ul style="list-style-type: none"> <li>• Panel warped convexly, pushing battens out of plane.</li> <li>• Painted image in good condition, but evidence of over-paint and an unusual uneven surface.</li> <li>• Background exposed gesso in poor condition, active flaking, recent loss, evidence of multiple treatments.</li> <li>• Glossy, thick, clear surface coating.</li> </ul>
Noli me Tangere (First Easter Morning) 1994,0501.3	17 <sup>th</sup> century, Crete. Paint, gold and gesso on wood, two original reverse battens. 606 x 472mm	<ul style="list-style-type: none"> <li>• Panel has slight diagonal warp, woodworm damage, vertical grain cracks.</li> <li>• Paint surface has</li> </ul>

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(Figure 4)		unusual undulating appearance, blind cleavage, active flaking. Restoration around edges. <ul style="list-style-type: none"><li>• Thick, dark, brittle varnish.</li></ul>
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Table 1

### Project Methodology

Information was gathered using non-destructive means. Each icon was subjected to a radiographic survey and optical examination. The paint surfaces were examined using infrared (IR) and ultra-violet (UV) imaging techniques, recorded in digital form.

Samples of wood were taken from each separate component and identified in thin section through optical microscopy by matching to reference collection specimens and a database of diagnostic characteristics. Organic materials (including glues, paint media, varnish layers, conservation and restoration residues and surface deposits) were sampled and analysed using either gas chromatography/mass spectrometry (GC/MS) or Fourier transform infrared spectrometry (FT/IR).

Cross-section paint samples were taken from selected areas and examined used optical microscopy, Raman spectrometry and scanning electron microscopy with energy dispersive X-ray analysis (SEM/EDX). This identified layer structures, pigments and gesso components. Further Raman analysis of pigments was carried out on

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grain-sized samples collected from areas where cross sections could not be taken. Raman, X-ray fluorescence (XRF) pigment analysis were carried out directly on the surface of areas on two of the icons (1996.1103.1 and 1998.0605.36) where no sampling sites were available.

This combination of techniques identified the present state of the substrate and paint layers, and in many cases informed the original manufacturing methods used, together with information on pigments and varnish layers, later interventions and deterioration.

#### Results, interpretation and treatment proposals

*St. Nicholas*

Drawing on the results of analysis, the condition of the icon and investigations into the likely use in liturgy, certain conclusions can be drawn about how this object was manufactured, used and treated in the past. Analysis showed the icon's original construction followed the traditions of post-Byzantine practice (Milanou 2001,p.5-6; Hetherington 1974). A wooden panel with two reverse battens, identified as *Cupressus sempervirens* Cypress, was coated with layers of protein bound gypsum. The image was painted with tempera bound pigments (including vermillion, lead white, orpiment, yellow ochre), the background was covered with gold leaf on a yellow bole and the surface coated with an oil varnish. The icon's size and format suggested it was one of the functioning icons of the despotic tier of the iconostasis (Sophocleous 2000,p.198) and so was in constant use. Radiography (Politis 1993), revealed many nail fragments in the surface which correspond to a previous addition of a metal halo and collar and splashes of beeswax were identified on the original surface.

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Analysis revealed residues of multiple restoration layers. A chronology of early and later campaigns could be identified. Early restorations were undertaken to hide wear and damage to *St Nicholas's* red *Himation* (cloak) and grey *Omophorion* (archiepiscopal cloth) and elements of his hair. Later, the red border, further elements of *St. Nicholas's* hair and left ear were repainted on top of an oil/resin varnish. Identification of residues of a bulky paint-mix on the surface of the gilded background suggested the remains of a mordant layer, applied to the original gold to support second gilding to the background. This layer was later removed with the subsequent damage inflicted on the original surface suggesting an aggressive cleaning campaign. Analysis confirmed that the icon had been subject to previous successive cycles of alterations, restorations and cleaning probably undertaken with harsh oil swelling solvents and pumice to remove the oil varnishes and over-painting (Espinola 1987,p.1106; Bentchen 1999,p.80) Both original and later layers were confused and adulterated by surrounding layers, making identification difficult. Many of these residues lay directly on original material and impacted on the image to varying degrees. Optical, UV (figure 5) and cross-section examination highlighted the extent of these interventions. Two later applications of oil-resin varnishes were identified on top of the paint layers.

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Figure 5 St Nicholas, UV image showing extent of surface disruptions as a result of previous cyclic treatments

Instability in the original panel structure led to separation between the planks and complete split in the right plank. Previous structural treatment had been undertaken to remove the original reverse cross-grain battens and attach an auxiliary support, made of *Fagus sylvatica*, beech (figure 6). Stassinopoulos (1998) suggests that this kind of treatment was prevalent between the 1920's and 1950's, undertaken by early '*professional empirical restorers*' bent on '*improving*' their structure. However, after this treatment the panel warped, the sliding cross-members of the auxiliary support became wedged and promoted renewed damage and flaking of the painted surface. This is a common problem with auxiliary supports (Brewer 1994,p.42; 2000,p.61) and the inexperienced application of this structural support implies a failure to understand the principles or impact of such a treatment on the rheology of a panel painting (Buck 1962,1972).

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*Figure 6 St Nicholas, auxiliary support attached to the reverse*

As a result of this research and in response to renewed instability in the panel and paint surface, a conservation strategy was proposed to remove the sliding cross-grain members of the auxiliary support, consolidate the detaching paint surface, reduce disruptive elements of restoration and replace the degrading modern oil-resin varnish layers. An environment with stable relative humidity will prevent further movement of the panel.

#### *Virgin and Child Eleousa*

The original style of the icon as a triptych is suggestive of a Greek 17th century monastic origin, probably from Mount Athos. The quality of wood (identified as *Tilia europaea*, lime/linden) and carving further support a northern Greek origin, possibly with Russian influence (Petsopoulos 2005; Espinola 1992,p.17-18). Though only the central panel remains, radiography revealed the position of metal fixings for the two wings. Analysis of the original paint layer revealed a simple

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palette (vermillion, carbon black, orpiment, azurite and lead white) mixed in a fat and oil containing medium, suggestive of egg tempera, with a gilded background on yellow bole. Remains of a thick oil-resin layer, directly on the original gold and fluorescing strongly in UV, indicated a degraded varnish (Rene de la Rie 1982,p.18) (figure 7). Dirt was ingrained in the exposed gesso and gilded background.

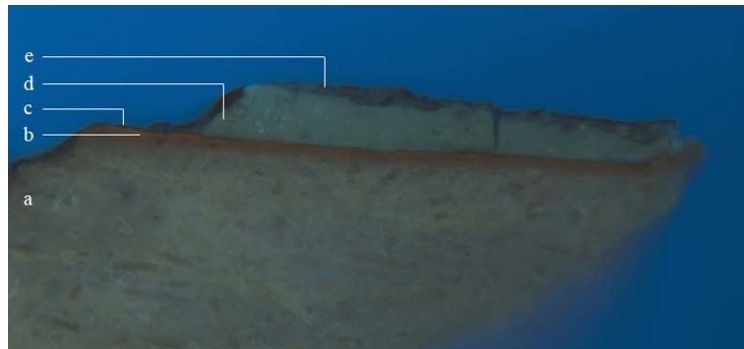


Figure 7 *Virgin and Child Eleousa*, paint cross-section from gilded background in UV light; a)gesso, b)bole, c)gold, d)varnish, e)dirt

The icon had suffered extensive woodworm damage. Lime is not usually subject to insect attack, (Espinola 1992,p.18) unless perhaps the wood had become excessively wet. Damage and pitting to the gilded background and gesso could similarly be due to water damage. In his *Hermenia*, Dionysius of Fournna recommended washing icons, placing them face up in water (Hetherington 1974,p.10). The bottom right corner was previously repaired with protein glue and paper attached to the reverse (figure 8). The remaining central panel was fitted in to a gilded frame with a thin wooden backing. Previous cleaning to remove the darkened varnish was partially successful, but with etching to the original paint layers and gilded decoration. Strong oil swelling solvent, as was traditionally used for cleaning (Hadjistephanou 2003), may also have disrupted the mordant used to attach the gilded decoration of the virgins red *Maphorion* (cloak). The

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chronology of these treatments is difficult to determine, but examination of the surface revealed no sign of restoration of the image or the application of another varnish.



*Figure 8 Virgin and Child Eleousa, reverse showing previous repairs to original panel*

Informed by this research, treatment was proposed to remove the icon from the frame, stabilise the panel and remove dirt. No further treatment would be undertaken, but a handling tray would be provided to protect the panel from further damage. The collaborative decision between the conservator and curator was taken not to replace the icon in the frame, but to keep them together for future study and reference. Suitable storage and care negates the necessity to further intervene, so no protective varnish would be applied to the surface of the icon.

#### *Mother of God of the Sign*

A stylistic interpretation of the icon suggested the panel to be a Russian 17<sup>th</sup> century image, but with a 19<sup>th</sup> century refreshed paint layer (Petsopoulos 2005; Lyanko, 2005) Analysis was undertaken to investigate this interpretation and to establish why the background was in such poor condition.

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The carved wood panel and reverse sliding cross-grain battens was identified as *Tilia europaea*, lime/linden; a typical choice of Russian icon painters (Espinola 1992,p.17-18). Oil bound pigments (including lead white, vermilion, iron containing pigments and silver leaf) were applied on top of a protein bound gesso. Following traditional Russian painting techniques silver leaf was used as the main decoration of the Virgin's *maforij* (cloak), applied on top of a red bole and coated with a tinted glaze layer (Golikov 2002,p.106). Bentchen (1999) refers to this layer as an '*intermediate varnish*'.

Macroscopic investigation revealed the painted layer structure to be multiple and complex. Analysis identified two restoration palettes and suggested a chronology of events. It was certain that, following traditions of Russian icon restoration, the painted figures and *olifa* (oil varnish) were refreshed a number of times (Bentchen 1999; Papageorgiou 1998,p.99), and the resulting image although appearing in good condition, was found on closer inspection to be heavily over painted (Mal'ceva 1995,p.27) (figure 9). A lower oil-bound restoration layer was coated with a generous application of an oil-resin varnish. Treatment to remove this varnish, prior to the application of a later restoration, resulted in loss to original paint, silver and glaze layers. Such damage is commonly encountered on Russian icons (Espinola 1987,p.1106). An upper restoration layer containing modern chromium and barium pigments was identified, with an oil varnish (that fluoresced light green) evenly coating the upper surface.

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*Figure 9 Mother of God of the Sign, macro-photograph showing over-paint on Christ's face including chrome yellow highlights to cheeks and eyes*

The background had evidently been altered, had a history of flaking and was missing a halo. Radiography revealed the presence of nails and corrosion products following the outline of the figures, providing evidence of a previously attached *Basma* (metal covering) directly on top of the original gesso (Trifonova 1996,p.316; Espinola 1992) (figure 10). This covering probably incorporated the halo. The *Basma* was later removed, damaging the gesso beneath, a common occurrence and commonly found damage (Trifonova 1996; Norsted 1995). A new gesso layer was applied to the background and coated with yellow and red earth pigments in oil. This gesso was poorly attached and evidently had a history of flaking from the original layer beneath. Three successive attempts to correct the problem with a beeswax adhesive were identified. At the time of the current analysis the background was flaking again.

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*Figure 10 Mother of God of the Sign, detail of radiograph showing position of nails to attach Basma to the background*

Similar solubility of the original and restoration layers hindered previous cleaning treatments. A treatment strategy was proposed to stabilise the background and replace the most recently applied oil-resin surface coatings with a stable conservation grade varnish. Suitable storage and display conditions with low light levels will reduce the rate of deterioration of the paint and varnish layers.

#### *Noli me Tangere*

The style and imagery of the icon suggested it originated in 17<sup>th</sup> century Crete (Chatzidakis 2001,p.15; Lymberopoulou 2005).

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Analysis confirmed the original structure and two, perhaps three, restoration campaigns. The panel and reverse cross-grain battens were identified as *Cupressus sempervirens*, Cypress. A calcite based gesso and original palette, containing vermilion, malachite, azurite, red lead, gypsum, and a lake were identified, together with remains of the original oil-resin varnish and traces of beeswax.



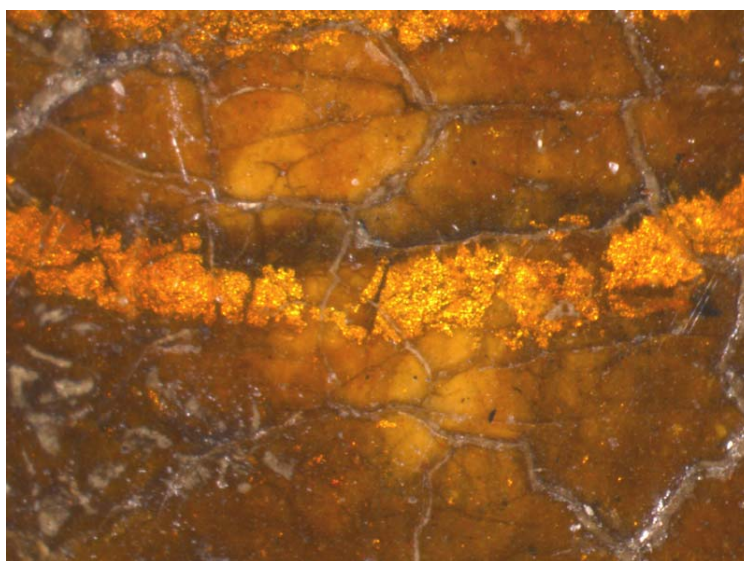
Figure 11 *Noli me Tangere*, detail of IR image showing later restoration to the left side

Radiography revealed cracks running through the panel, indicating weakness in the structure. It also revealed the extent of disruptions to the gilded background and woodworm damage around the outer edges. This provided an explanation for the early damage to the painted surface and the condition of subsequent repairs. IR imaging revealed previous restorations (figure 11) and analysis identified two distinct restoration palettes. An early restoration, including protein bound gesso and pigments, was applied next to and on top of the original surface. However the gesso was not built up to the level of the

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original, but sat just below, forming a step around the edges. The whole of the background was re-gilded, the crosses were re-painted and a black inscription on the right was added. A later restoration paint layer was found to contain modern pigments bound in oil. The surface coating was made up of two layers of oil resin varnish; a thin upper and very thick, discoloured and brittle lower, applied between the two restoration layers (figure 12).



*Figure 12 Noli me Tangere, macro-photograph showing thick, brittle varnish with abraded mordant gilding beneath on Christ's left ankle.*

Treatment was proposed to remove the actively degrading oil-resin varnish and modern restorations to reveal the fine quality of the original surface for study. This will increase knowledge of this period of icon painting and help to establish provenance for the object. A stable environment will be provided to prevent increased damage to the panel structure and associated problems.

## **Discussion**

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The aim of a conservation strategy is to stabilise and preserve the object through research and study. The challenge to the museum conservator is to balance this against the need to preserve the evidence of use and original context.

With reference to these icons the challenge starts with the inherent instability caused by the traditional techniques of manufacture. For example, when constructing the panel, the manuals recommend the back should be braced with cross-grain battens to keep it flat (Sendler 1981,p.189). While in some cases a well-chosen piece of wood has resulted in a dimensionally stable icon, the majority develop grain-directional cracks and splits. The icon of *St Nicholas* displays this typical damage and the added auxiliary support, intended to correct the problems, has resulted in further damage. A suitable conservation intervention must balance the need to remove the damaging elements and stabilise physical integrity, against the desire to retain evidence of previous treatment. On this basis, applying the conservation principle of minimum intervention it would seem appropriate to remove the sliding battens, but not the remainder of the support as this is not causing deterioration. This strategy would prevent further physical damage and would retain evidence of the impact of use and context.

The icon of the *Virgin and Child Eleousa*, having lost the wing elements of the triptych, had been placed in a frame. Although it is impossible to determine when this was done, knowledge of Orthodox practice can provide clues as to why. This alteration to the structure influenced the image and context, but enabled continued use of the icon in its incomplete form. The need to remove the frame in order

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stabilise the wood, provides the opportunity to debate whether it should be replaced or retained separately for study. Such a treatment decision impacts on the original structure and past context of the icon, but with the museum's needs in focus.

Traditional practice recommends the painted surface be coated with an oil varnish to protect the surface and give the colours '*greater translucence and depth*' (Ouspensky and Lossky 1952,p.55), and to make the surface water-proof by rubbing the varnish in to the surface with the hand (Bentchen 1999). The varnish oxidises over time, darkening and obscuring the image. Russian icons are more complicated, as oil glazes are used as part of the original technique to add depth and colour, and optically tint layers (Golikov 2002, p.103). Knowledge of original techniques is paramount in preventing loss of original glazes and paint layers by inexpert cleaning. The desire to make the image more visible has led in the past to the removal of degraded insoluble oil varnishes, often by harsh, inappropriate solvents. As a result the paint and gilded surface of many icons were damaged by wear, abrasion, removal of original glazes and leaching of original materials, ultimately detrimental to the structure of the surface (Khandekar et al 1994; Phenix 1998). Each of the icons studied showed evidence of this kind of treatment.

Increasing insolubility of relatively modern oil-resin varnishes directly influenced the current decision to replace the varnishes of three of the icons (1994,0102.1, 1998,0605.36 and 1994,0501.3). In the case of the *Virgin and Child Eleousa* there had been no previous alteration to the original surface except for cleaning, possibly because of a past context of use in private devotion. The decision was therefore taken not to

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varnish, but to maintain the icon's continuing survival with very little visual intervention. For the *Noli me Tangere* icon, removal of the deteriorating restoration varnishes would facilitate art historical investigations to establish provenance through study of the original painting technique. Here the usefulness of revealing the original style and technique was considered more important than the need to retain evidence of restoration practice. It was also considered advantageous in preventing further damage to the original paint layer.

The conservation of icons is further complicated by the damages caused and residues accumulated during use in liturgy. In the case of two of these icons (1994,0102.1 and 1994,0501.3) beeswax was located close to the original surface indicating evidence of use. The contextual import for the museum outweighs the desire to remove the beeswax and so it will be retained.

Three of the icons studied illustrated multiple re-painting campaigns (1994,0102.1, 1998,0605.36 and 1994,0501.3). Restoration was most likely undertaken for continued use and is considered intrinsic to the preservation of that context. However, in each case the restoration was unstable or obscuring the original image and in two cases (1994,0102.1 and 1998,0605.36) had been partially removed and replaced several times, resulting in damage to the original surface. A strategy for selective removal of over-paint may be considered desirable to the appearance of primary elements in the case of two of the icons. The removal of later over-paint on *St Nicholas's* face will reveal the original beneath and removal of the smeared modern oil-paint restorations on the surface of the *Noli me Tangere* icon will uncover original details of technique.

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Any decision to undertake conservation treatment involves a value judgement of the importance of the evidence of use, the necessity to stabilise the icon and the clarity of the image.

### **Conclusion**

Icons are complicated objects with potentially unstable structures and hidden intangible contexts. Research of the type discussed above into the manufacture, use and condition of the icons has proved invaluable in developing an ethical approach to the conservation of each piece for the museum context.

Knowledge of how differences in cultural practice impact on the condition of icons is paramount. This was illustrated through research of Russian and Greek traditions of production and interventions. Although icons were produced in a climate of rigid practice and rules, their individual journeys through history results in very different and complicated structures. No two icons are the same and as such cannot be treated in the same way.

This cross-disciplinary project, undertaken at The British Museum demonstrates the range and depth of expert investigation required to fully understand what has happened to the icon's structure and in what context this may have happened; how it was done and why. This has informed an ethical approach to the care and preservation of each individual icon addressing their core values of physical, visual and spiritual integrity within the museum context. As a result of this

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research project a full and appropriate conservation programme for the museum's collection of icons is anticipated.

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