The study and conservation of four ancient Egyptian funerary portraits: provenance, conservation history and structural treatment

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SUMMARY A number of Roman period Egyptian funerary portraits are curated by the Department of Ancient Egypt and Sudan at the British Museum (BM). A collaborative research project to investigate this collection was undertaken jointly by the BM and the National Gallery, London, the owner of two of the portraits. In the course of this examination four portraits (Lady in Antonine Dress, EA65346; Military Man, EA65345; Woman with an Emerald Necklace, EA74831/NG3931; and Man with a Gilded Wreath, EA74832/NG3932) that were found to be in need of stabilization were the subjects of intensive conservation treatment and study. This contribution discusses the archaeological/historical background and construction of these portraits, and presents their conservation history, initial condition and final structural conservation. An initial mounting solution is described and proposals made for longer-term care to enable study, display and loan.

Condition assessments revealed that all four portraits had previously been treated in a similar way: each had been flattened and adhered to a rigid auxiliary support that did not allow for movement of the original panel in response to environmental change. This treatment was producing damage, with all four portraits separating from their supports, leading to cupping and splitting of the panels and paint loss. The paint was consolidated, the panels removed from the supports and the splits realigned and secured. The panels were then supported on profiled soft mounts.

Introduction

The Department of Ancient Egypt and Sudan at the British Museum (BM) curates 30 Egyptian funerary portraits from the Roman period. Painted on wooden panels, these portraits of the deceased were fixed to the outer wrappings of mum-mified bodies and are probably best, if not strictly correctly, known as ‘Fayum portraits’ after the area where many were found. After excavation it was common for portraits to be removed from the mum-mified remains and to become viewed as paintings rather than as part of a funerary assemblage. They have also undergone a range of repair or restoration treatments and mounting methods, each of which has affected their condition. A technical research project was therefore instigated to survey this collection so that the nature of these alterations could be better understood and those portraits most in need of conservation identified. During this survey it became obvious that the paintings in the best condition were those that had not been fixed to rigid supports, and that four portraits that had been adhered to wooden ‘pseudo-cradles’ were in the worst condition. These four portraits – Lady in Antonine Dress (EA65346: portrait A), A Military Man (EA65345: portrait B), Woman with an Emerald Necklace (EA74831/NG3931: portrait C) and Man with a Gilded Wreath (EA74832/NG3932: portrait D) – were therefore selected to undergo more detailed conservation assessment and treatment. To enable this group of portraits to be discussed more clearly throughout this article they will be referred to as portraits A, B, C and D as listed above and illustrated in Figure 1. Two of the portraits (C and D), although housed alongside other Egyptian funerary portraits at the BM, belong to the National Gallery, London (NG) and the assessment and treatment were undertaken collaboratively by conservators from the NG and BM. Prior to treatment, and as part of the process for developing a conservation strategy for these objects, the problems involved were discussed both within
Figure 1. Portrait A (EA65346: top left), portrait B (EA65345: bottom left), portrait C (EA74831/NG3931: top right) and portrait D (EA74832/NG3932: bottom right) imaged in raking light to show the extent of the damage caused by adhering the portraits to the pseudo-cradles.
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As discussed above, the four portraits that showed the worst signs of damage were selected for conservation treatment. Of these four, portraits A and B are listed in the BM database as being produced in encaustic media, while the medium for portrait C is identified as tempera and portrait D is described as mixed tempera and encaustic [11; pp. 97, 95 and 86]. However, as no scientific analysis of the media for these portraits has been undertaken, it seems likely that these identifications were made on the basis of visual observation alone. Examinations

Original context

Egyptian funerary panel portraits in the Roman period developed from the coalescence of two traditions: the longstanding and complex burial customs of ancient Egypt and the use of memorial portraiture in the classical world. In ancient Egypt, the aim after death was to achieve eternal life. For this to be attained it was believed that both the body and the spirit needed to be preserved and hence mummification was developed as a method of safeguarding the former. By the Roman period (30 BC to AD 395) the art of mummification and associated burial rites had been practised in Egypt for thousands of years and was deeply embedded within the culture. Given this, it is not surprising that these customs were adopted and further developed by the newly arrived settlers from Greece and Rome. During this period mummification continued but the stylized faces previously featured in masks or on coffin lids were replaced by realistic portraits of the deceased painted on panels and fixed over the face area of the body, Figure 2. While it is not known whether these portraits were idealized images or true representations painted at the point of death, computerized axial tomography (CAT) of a number of mummies that have retained their portraits has shown a consistency between the age of the individual at death and the apparent age depicted in the portraits [8; p. 15].

Figure 2. Mummy of a young adult male excavated in Thebes (EA6713) showing the intended use of funerary portraits

The majority of known funerary portraits come from the Fayum region, approximately 60 km south west of Cairo. The development of the Bahr Yusuf canal and irrigation systems under the Ptolemies (305–30 BC) created a fertile and prosperous area during this period. The number of funerary portraits excavated and the modes of dress that they depict indicate that it was home to a large immigrant population. Funerary portraits have also been found at other sites, notably Saqqara, Alexandria and Thebes showing the tradition to be more widespread than just this one area [9; p. 23, 10; p. 17].

Funerary portraits seem to fall into two distinct types: those produced in encaustic (wax medium) on thin lime wood panels and those painted in tempera (water-soluble medium) on thicker oak panels.
conducted as part of this study suggest that in each case the application of the paint on these portraits is entirely consistent with the use of encaustic methods.

**Provenance**

The known provenance of the four portraits selected for treatment is limited. All were among a large number of such portraits purchased in Cairo in the late nineteenth century by Theodor Graf, an Austrian antiquities dealer. Graf sold these four portraits to Dr Ludwig Mond (1839–1909) in 1893 and they passed to his son, Sir Robert Ludwig Mond (1867–1938), who donated portraits C and D to the NG in 1924. On his death in 1938 the other two portraits (A and B) were bequeathed to the BM. In 1994, as part of a reorganization of national collections, the two NG portraits were moved on permanent loan to the BM.

The portraits are recorded as being excavated in er-Rubayat although there remains some doubt about this. During the 1880s extensive excavations were carried out in the Fayum region and in 1887 a major Roman period cemetery, including many mummies with attached portraits, was discovered near er-Rubayat. No records appear to have been kept of this site, although recent work suggests it may have been at Kom-el-Kharaba-el Kebir [12; p. 14]. The majority of the portraits were removed from the mummies and this site has long been thought to be the origin of many of the mummy portraits in circulation among Cairo dealers. There is, however, no conclusive evidence that the portraits discussed here come from er-Rubayat, particularly as the majority of portraits from that area are of the tempera type, painted on thicker, oak panels with a less realistic style of painting. It has instead been suggested that portraits of the type discussed here may originate from Hawara, a site in Fayum excavated by Flinders Petrie in the 1880s [12; p. 14]. It is known that Petrie had problems with dealers raiding his site; an entry in his journal for October 1888 reveals that “old Faraq the Arab dealer was allowed to work at Hawara … But he only got four or five portraits” [12; p. 19]. Portraits from the area of Hawara tend to be on thinner lime panels, painted in encaustic media and more finely executed than the tempera portraits associated with er-Rubayat. Roberts refers particularly to a group of portraits from Hawara in the Myers Collection at Eton College, one of which is of a man (MC 1473). It has been suggested that his portrait bears a familial likeness to portrait A [11; p. 96], which would indicate that the latter portrait was also from Hawara. While not conclusive, such a connection might explain why the portraits discussed here are so different from the majority of those excavated at er-Rubayat.

**Analysis**

Scientific analysis was carried out to identify the conservation materials present and to aid the structural conservation of the portraits. Analysis was undertaken using Fourier transform infrared (FTIR) spectroscopy. The details of the analytical

<table>
<thead>
<tr>
<th>Portrait</th>
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<tbody>
<tr>
<td>A</td>
<td>Portrait of a Lady in Antonine Dress (EA65346)</td>
<td>Glue and restoration paint between splits</td>
<td>Flake from inside crack: proteinaceous glue</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Blue paint on cradle</td>
<td>Proper right top of curved panel: epoxy resin</td>
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<td></td>
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<td>Card interlayer</td>
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<td></td>
<td></td>
<td>Glue between cradle, card and original panel and within card interlayer</td>
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<tr>
<td></td>
<td></td>
<td>Blue paint on cradle</td>
<td>Ethylene vinyl acetate/polyvinyl acetate (EVA/PVA)</td>
</tr>
<tr>
<td>B</td>
<td>Portrait of a Military Man (EA65345)</td>
<td>Glue and restoration paint between splits and material from central break</td>
<td>Samples 23–25: proteinaceous glue, linseed oil and gypsum</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Glue between cradle and card and between card and original panel</td>
<td>Sample 26: lead white and linseed oil</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Black material on reverse</td>
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<td>C</td>
<td>Portrait of a Woman with an Emerald Necklace (EA74831/NG3931)</td>
<td>Glue and restoration paint between splits</td>
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</tr>
<tr>
<td></td>
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<td>Sample JD3: beeswax, linseed oil and mastic</td>
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<tr>
<td></td>
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<td>Samples 1 and 2: proteinaceous glue, gypsum, beeswax and PVA</td>
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<tr>
<td></td>
<td></td>
<td>Proteinaceous glue</td>
<td>Adhesive from proper left below red robe: proteinaceous glue, gypsum and beeswax</td>
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<tr>
<td></td>
<td></td>
<td>Glue between cradle and card and between card and original panel</td>
<td>Adhesive from neckline of red robe: proteinaceous glue, gypsum, beeswax and PVA</td>
</tr>
<tr>
<td>D</td>
<td>Portrait of a Man with a Gilded Wreath (EA74832/NG3932)</td>
<td>Glue and restoration paint between splits</td>
<td>Samples JD1–JD4: proteinaceous glue and cellulosic material</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Samples 1: gypsum</td>
<td>Sample 1: proteinaceous glue</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Samples 4: proteinaceous glue</td>
<td>Sample 4: proteinaceous glue</td>
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<td></td>
<td></td>
<td>Yellow deposits from back of panel</td>
<td>Proteinaceous glue</td>
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<tr>
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<td>Jute fibres and resinous material e.g. a pinus mastic type resin</td>
<td>Yellow deposits from back of panel</td>
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Note: all the analyses were conducted using FTIR
method are given in the experimental appendix and the results are summarized in Table 1.

Timber identification was undertaken on all four panels in 1997 prior to the work described here. The panels for portraits A, C and D were identified as *Tilia* sp. (lime), while the wood for portrait B was identified as probably *Quercus* sp. (oak) [13; p. 109].

**Conservation history**

Nothing is known of any work undertaken on the portraits prior to their purchase by the Mond family, but it is possible to trace at least some of their conservation history from this point onwards. At the time of this study, none of the four portraits was in its original condition, as they had all been flattened onto pseudo-cradles, Figure 1. A cradle comprises a system of horizontal and vertical battens that are attached to the reverse of a panel painting, the intended purpose of which is to prevent warping of the panel without affecting in-plane movements of the panel that are caused by environmental changes [14]. The type of cradle used here is described as a pseudo-cradle as, unusually, the cradle is not attached directly to the back of the panel but instead the vertical and horizontal battens are fixed to a board that provides a flat surface onto which the portraits are attached. The portraits treated here were all adhered to the front of the cradle panels with an interlayer of card between the portrait and the cradle. A label on the reverse of portrait B has been traced to the firm of H. Reeve, a family of picture restorers known to have worked for both the Mond family and the NG. The label gives an address in Jermyn Street at which it is known the firm was based during the period from 1924 to 1937, Figure 3 [15]. As the mounting of all the portraits is in the same style it seems reasonable to assume that they were treated together as a group in the Reeve studios before they were divided in 1924.

It is clear from the patterns of the splits that have formed in the panels that all the portraits were deliberately flattened onto the cradles. In some cases fillers were used to bridge the gaps between these splits. Although the composition of these complex fillers has yet to be identified conclusively, analysis of samples by FTIR has revealed the presence of combinations of proteinaceous glue, gypsum, wax and polyvinyl acetate (PVA), Table 1.

Other evident structural alterations include the addition of a painted wood insert into portrait D (Figure 4), while the card interlayer was also used as an infill for areas of loss along the bottom edge of this portrait, Figure 1. Two timber additions (species not identified) had been used to replace areas that had been lost from portrait B. The cradle of portrait A had been reduced in size and painted with a blue PVA-based paint, presumably at a later date to fit in with display requirements, Table 1. The card layer and adhesive used on portrait A was different to those in the other three; the card was much whiter in appearance and had a different texture,
while the adhesive was based on an ethylene vinyl acetate/polyvinyl acetate (EVA/PVA) copolymer, Table 1. It has not been possible to locate any records of structural alteration to the portraits in either institution.

BM conservation records show a range of minor treatments applied to portraits A and B from 1993 onwards. There is also evidence of previous conservation treatments on the painted surface of portrait C (Table 1), and NG records show that portraits C and D both had some areas of loose paint re-laid in 1941. There were clearly also extensive interventions and restorations in the past that have not been recorded, with differences in appearance and quality indicating that these were the products of several different treatment campaigns, Figure 4. Samples were taken of many of the retouched and overpainted areas and these will help to inform any future surface treatment of the portraits.

Condition prior to conservation
Condition assessments undertaken as part of this project showed the four portraits to be structurally unstable with: mobile splits in the original panels; areas of delamination between the cradle, the card layers and the original panels; and areas of raised and flaking paint.

Further extensive splitting of the panel of portrait A had occurred in recent times as a comparison with an archival photograph from the 1930s reveals that the splits have opened and extended, Figure 5. There were numerous open vertical splits with raised edges and cupping across the surface of the panel, Figure 1. Several splits were stepped, with splintered bridges of wood. The card interlayer had become detached in some areas across the entire portrait, particularly along the left and right sides where the bond between the card layers was failing. As discussed above, this card and the adhesive used to attach it to the cradle were different from those used in the other three portraits.

The central vertical split on portrait B was unstable, as were several partial splits from the top and bottom edges, with resulting deformation (convex cupping) across the panel. There was also movement between the original panel and the additions; the full-length join along the proper left side had opened slightly with new vertical splits and a concave warp across the width of the addition, Figure 1.

Figure 4. Ultraviolet-induced luminescence image of portrait D (EA74832/NG3932) showing the differences between the pigments on the original panel and on the timber insert, and the extensive past restoration of the portrait

Figure 5. Black and white image of portrait A (EA 65346) taken in the 1930s. Comparison with the more recent image in Figure 1 shows that the splits have opened and extended
Both portraits C and D displayed active paint flaking and areas of detachment from the card interlayer, suggesting the panels were under stress. The exposed card fills of portrait D were no longer adhered to the support and were forming bulges along the bottom edge of the portrait, Figure 1.

**Structural conservation**

It was decided to undertake structural conservation of the portraits in the NG conservation studios to make use of the multipurpose clamping table. Treatment was undertaken within a stable environment (relative humidity (RH) 55±2% and temperature 21±2°C) so that movement of the original panels during treatment could be monitored and controlled to achieve correct alignment of the splits. Each of the four portraits was treated in a similar way, with issues specific to the individual portraits being addressed as treatment progressed.

The painted surface of each portrait was consolidated with an acrylic dispersion (Lascaux Medium for Consolidation: MFC) applied beneath the lifting paint and through cracks with a small brush [16]. Finger pressure was applied to the treated area over a release layer of lens tissue. In most cases this was sufficient to achieve adhesion, although some areas were weighted with small sandbags until the adhesive dried. Lascaux MFC was chosen for its low surface tension, its ability to penetrate beneath the painted surface, its appropriate bond strength and good ageing properties [17]. It proved to be an effective adhesive for aged encaustic paint and had the additional advantage of not causing any staining, darkening or other colour change to the original paint or restoration materials.

It was decided not to apply a protective facing tissue to the delicate painted surface. In tests it was found that, because of the wide range of paints and conservation residues with differing solubilities present, all the usual facing adhesives (both aqueous and solvent-based) produced alterations to either the original paint layers or the restoration materials. The use of a volatile compound such as cyclododecane was discussed, but the methods of application and health and safety issues precluded its use on the portraits. As the panels would be removed from the cradles with the portraits face up, the painted surface could be monitored at all times, making application of a facing less vital. Furthermore, it would have been necessary to remove any facing tissue to treat the splits.

The cradle of each portrait was clamped to the worktable. The original panel was then removed from the cradle with a Japanese *hassunme* cross cut saw using a horizontal action through the centre of the card interlayer, Figure 6. The action of this particular type of saw, which cuts on the pull and has a flexible, braceless blade, allowed accurate cutting with very little vibration. A fine blade *kugihiki* flush cut saw was used in areas where the panel was particularly delicate or fragmented as this produced even less disturbance to the panel. Sharpened palette knives were also used in some areas. In this way the separation of the panels from their cradles was achieved with...
no disruption to the delicate painted surface. After removal from the cradles all the panels remained relatively flat, held under tension by the card and the glue/adhesive residues on the backs of the panels, Table 1. To support the paint layer and panel distortions once removed from the cradle, each portrait was placed face down onto a board covered with Tempur foam to which a layer of lens tissue was attached to protect the paint layers. The bulk of the card was then removed from the reverse manually with a scalpel. Any residual card and glue were removed with a Laponite poultice – 10% weight to volume (w/v) in water – chosen to reduce exposure of the original wood to the swelling action of the water. Working in small areas, the poultice was applied to the residue with a lens tissue interlayer and left for up to 10 minutes. The poultice and tissue were then lifted away and the swollen residue removed with a scalpel. This process revealed the reverse of the panels for the first time. Patches of dark, possibly original, materials were found on the reverse of the panels along with carving/chisel marks, providing evidence of original production and use, and offering proof that the panels retained their original thickness, Figure 7.

The splits in the original panels were aligned and secured in position using Resin W PVA adhesive, gap filling where necessary with a mixture of Resin W and equal weights of coconut fibre and phenolic microballoons. Research has shown that this particular gap filler can provide a bond with good structural and mechanical properties compared with other combinations [18]. Concerns have been raised about the long-term stability of Resin W as recent research has shown it becomes stiff or brittle with age [19]. While these issues were acknowledged, the adhesive’s working properties, experience in its use and the requirement that it be compatible with existing conservation residues (waxes, glues and earlier PVA adhesives) were also considered important. Overall, when used alone and in combination with fillers or soft, compressible balsa wood, it was considered the most appropriate available choice for repairs to the fragile panels. The undiluted adhesive was applied with a brush and the more bulky gap-filling adhesive mixture with a small spatula. For larger open splits, adhesive was applied to the edges of carved balsa wood inserts, which were then inserted into the split and clamped in position until the adhesive dried. For ease of handling, the thinnest inserts were carved with greater depth than required (so that they extended above and below the surface of the panel) but to the correct width to bridge the split. The oversized insert was then fitted with tweezers and adhered to one side of the split. The adhesive was allowed to dry and the insert carved to almost the correct depth of the panel. The opposite side of the insert was then adhered to the second split edge and the area aligned and clamped in position. After the adhesive had dried the insert was shaved with a scalpel to fit flush with the depth of the original panel on the reverse and to sit just below the paint surface on the front, Figure 8. The cracks most out of alignment or with their edges curling towards the front were treated with moisture applied directly to the surface prior to adhesion, but all other areas realigned well either alone or with minimal pressure. Various clamping methods were employed and protective layers of lens tissue or padded wood blocks covered with 3M silicone tape were always placed closest to the painted surface. For splits in the centre of the panels that could be realigned easily, Resin W was introduced to the split edge on the front side and worked into the split by flexing the panel. Then with the portrait face up, the curve of the panel was supported from the reverse on wooden build-ups and the painted surface was weighted over padded wood blocks placed along the splits. A movable wooden ‘bridge’ construction was used to allow weights to be placed on the small wood blocks while preventing these weights from falling, Figure 9. The splits were also treated from the reverse; Resin W was introduced and the split weighted, again with intermediate small padded wood blocks. During this phase the curve of the panel was supported at the edges and small Plastazote wedges were placed around the weights to prevent them tipping off the wood blocks and making contact with the panel, Figure 7. Splits along the edges of the panels were held in alignment with model-makers’ carbon clamps, with Plastazote supports and wood blocks to spread the pressure of the clamps, Figure 9.

The majority of the structural work undertaken followed the same course for all the portraits; instances where the treatments varied are detailed below.

Portrait B had two veneer inserts that had been used to fill areas of loss and the portrait had also been pinned to the cradle using eight metal panel pins. The pins were cut through with a hacksaw and the veneer inserts removed before the portrait was separated from the cradle. After the portrait had been removed from the cradle it was found to have a strip of woven cloth applied to the reverse, which was acting as a ‘hinge’ holding the two sections of the portrait together. The cloth, protein glue and gypsum fill residues were removed.
using a Laponite poultice as described above, Table 1. The panel was separated into two pieces along the central split and the break edges cleaned further to facilitate a good join. The lower half of the join was first adhered with Resin W and then a balsa wood insert was made to fill the gap in the top section. The split was aligned and clamped until the adhesive dried using the multipurpose clamping table at the NG, Figure 9 [20]. As a result of the removal of the card and glue, slight convex cupping appeared along the top edge of the panel between each split. By joining the two sections using a balsa wood fill as described above, it was possible to achieve a strong in-plane join across the two sections but the overall curvature of the panel was increased. The back of this portrait had previously been cleaned to a greater degree than the other three; there were some small patches of black residues on the reverse and these were identified as bitumen, Table 1.

A layer of heavy, open-weave cloth was found covering the reverse of the portrait C. It was well adhered with a generous application of a protein glue, Table 1. This was softened with water and the cloth and glue peeled away with the aid of a scalpel. The previously repaired complete vertical splits remained well adhered but some were slightly misaligned and were therefore opened by softening the proteinaceous glue with water, realigned and re-adhered with Resin W.

The card and fill material along the broken bottom edge of portrait D were removed by softening and scraping the glue along the join edge with a scalpel. The central vertical wooden additions were examined and found to be well fitted and adhered and so were left in place, Figure 4. Stepped (out-of-plane) splits were realigned using the clamping table, Figure 9. For narrow or hairline splits the join edges were first wetted either with diluted Resin W or sturgeon’s glue (±5–7% w/v in water) to aid penetration of the full-strength PVA adhesive into the splits. The reverse of the portrait was found to have extensive residues, particularly a yellow deposit that was identified as a mixture of jute and resinous materials, Table 1.

As a consequence of treatment, all the panels took on a convex curvature to a greater or lesser degree. It was noted that during the removal of the backing from portrait A, the panel curled slightly forwards at the left and right sides, increasing the concave cupping across the paint surface. However, once the residues of card and EVA/PVA adhesive on the reverse were removed the panel took on a pronounced convex warp, Figure 7. For reasons not yet fully understood, portraits A and

Figure 8. The balsa wood inserts on Portrait A (EA65346: left) and portrait B (EA65345: right)
Figure 9. Different methods of applying pressure to repair splits in the panels during treatment: the clamping table (top left and bottom); the ‘bridge’ (top right) and model-makers’ clamps (centre right)
B curved more than the other two portraits. A possible cause for this could be the way in which the timber was cut for use as a panel. The original methods of preparation for these panels are not known conclusively but microscopic examination shows that portrait C is made from a radial cut, which should be very stable and has, as expected, developed only a gentle curve. Portraits D and B are both made from tangential cuts and although both would be expected to be less stable, they have formed gentle and quite severe curvatures respectively. It has not been possible to identify the cut of the panel for portrait A because of its extreme thinness [21].

The paint surface and the residues on the reverse of the panels are also a likely cause of the differences in the curvature. For example, portrait B had been cleaned extensively during a previous treatment and this could account for the considerable curvature in this instance. In contrast, portrait A retains residues of original material on the reverse showing that no such extensive cleaning had occurred and suggesting that the removal of material from the reverse of the panels is not the deciding factor in the level of curvature developed by portraits A and B. Portraits C and D have multiple complete vertical splits through their structure and retain bitumen and mummy wrapping residues, which could perhaps explain the reduced curvature of these two portraits. The thickness of the panels (2–3 mm), the cut of the prepared timber and the consequences of previous damage and treatment must all have had an effect on the deformation of the timber panels.

Handling boards were made to provide a safe environment for the portraits in long-term storage. In order to create a standardized storage method all the boards were made the same size. Four pieces of Hexlite were cut, large enough to provide a 50 mm handling edge for the largest portrait. The rough edges were covered with self-adhesive aluminium tape and the upper surface with a 5 mm layer of Plastazote (adhered to the Hexlite with double-sided tape). Profiled Plastazote strips were cut to support the convex curve across each panel fully. These were attached to the Plastazote-covered Hexlite, Figure 10.

Once treatment was complete the portraits were returned to the BM conservation studios where they were gradually reconditioned to the slightly drier prevailing conditions that are maintained in the Egyptian department stores and galleries. A temporary humidity chamber was created and the environment in the chamber was controlled using a combination of conditioned Proisorb cassettes and a humidifier. The humidifier was controlled by an electronic humidistat that was set to the required RH and gave a range of ±2%, Figure 10. Once conditioned, the portraits and the Hexlite supports will be housed in bespoke storage boxes to provide acid-free, buffered storage. The boxes will include a clear panel in the lid to allow the portraits to be viewed and identified with minimal handling.

Results and conclusions

The original survey of the funerary portrait collection revealed that the portraits maintained in their original context as part of a wrapped mummy and those that were detached from mummies, but which had not been fitted with auxiliary supports, were in the best condition. Portraits that had been modified, particularly those that had been flattened onto supports, had incurred structural damage. The group of four portraits discussed here had suffered significant structural damage, most likely due to their mounting on rigid panels attached to cradles. The adhesion between the support, card interlayer and portrait had failed in all cases, causing splits to open and cupping and distortion of the panels, leading in turn to paint loss. Although their post-exavation provenance is known, these four portraits have no recorded archaeological context and all had undergone significant previous structural treatment and restoration with very little documentation of these interventions. The lack of information on the original context is not unusual for objects excavated during this period, nor is the lack of conservation documentation, although use of such cradles is consistent with the treatment of thinned panel paintings at the time when this work was likely to have been undertaken.

The removal of the cradles has made the portraits much more stable – an expected outcome in light of the stability of other portraits in the collection. Because they are very thin the timber panels on which the portraits are painted are highly susceptible to fluctuations in RH and it is important, therefore, to store and display them within stable environments. Once the portraits have reacclimatised to the environmental conditions in the BM it will be possible to complete the conservation treatment, following discussion between curators and conservators to determine the level and type of retouching for the new balsa wood fills. The curvature of two of the portraits (EA65345 and EA65346) and whether this could or should be reduced will need to be considered [22, 23, p. 135], and it will also be necessary to provide display mounts for all four portraits. At
present, flexible supports are being considered that have been used with success on thin panel paintings [24].

Follow-up work will also include further identification of the restoration materials, which will help to inform discussions and research into the possibility of removing them. Imaging studies of all four portraits using ultraviolet- or visible-induced luminescence methods have shown significant levels of restoration, Figure 4 [25]. Ideally the distribution of restoration materials should be mapped fully to give a realistic picture of the losses, which will help when making informed judgements about the removal of disfiguring and possibly damaging restoration paint.

As a consequence of treatment the portraits remain, without doubt, very fragile but they are no longer splitting or cupping and the paint surface is less at risk of flaking and loss. The development of a flexible mounting system and a storage system that promotes minimal handling should ensure the longevity of the portraits and allow them to be used for display and loan in the long term. Environmental control will need to be maintained to prevent dimensional changes to the vulnerable portraits that would result from fluctuations in RH. Since the removal from their rigid supports, two of the portraits have developed a curvature that is more pronounced than it would have been originally. This is likely to be due to a combination of the cut of the original timber, the removal of original materials from the reverse of the portraits, and the coatings or restoration materials applied to the fronts of the portraits.

This project has involved the collaboration of conservators and curators from the NG and BM, fortuitously instigated by the nature of the Mond bequest. This has led to an exchange of skills across the disciplines of paintings conservation and archaeological object conservation that has been mutually productive.

Experimental appendix

Fourier transform infrared (FTIR) spectroscopy was performed on a Nicolet 6700 spectrometer attached to a Continuum IR microscope equipped with MCT/A detectors. The sample was analysed in transmission mode, flattened in a diamond microscope equipped with MCT/A detectors. The sample was analysed in transmission mode, flattened in a diamond microscope equipped with MCT/A detectors. The sample was analysed in transmission mode, flattened in a diamond microscope equipped with MCT/A detectors. The sample was analysed in transmission mode, flattened in a diamond microscope equipped with MCT/A detectors.

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Materials and suppliers

- 3M silicone tape: BDK Industrial Products Ltd, Levinton Park, Bridge Road, Levinton, Ipswich, Suffolk IP10 0JE, UK, www.bdkindustrialproducts.co.uk/tapes-and-adhesives
- Balsa wood: Balsa Mart, www.balsamart.co.uk
- Self-adhesive aluminium tape: Screwfix, www.screwfix.com
- Berma multiclam PCL8710/2 and PCL8720: Shesto, www.shesto.co.uk
- Coconut shell flour: Hallmark Fraulo Ltd, 55–56 Hillgrove Business Park, Nazeling Road, Nazeling, Essex EN9 2HB, UK, www.hallmarkfraulo.co.uk
- Japanese baghile flush cut saw (No. 300326) and Japanese hassume cross cut saw (No. 110039): www.apfitzpatrick.co.uk

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References


