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"The Illusion of an Authentic Experience": A Luster Bowl in the Ashmolean Museum[1]

The raison d'être *of the collector is to provide a livelihood for the dealer and a profitable sport for the faker.*[2]

Sir Alan Barlow's bequest of Islamic ceramics in 1956 marked a turning point for the collecting activity of the Ashmolean Museum in the field of Islamic art. His gift of 167 objects constituted a remarkable overview of five centuries of ceramic production in a region stretching from modern-day Iraq to Turkmenistan, and provided a valuable core of Persian material to what would subsequently become the third largest Islamic collection in the UK.[3] To this day, much of Barlow's legacy anchors the permanent ceramic display in the Sultan bin Abdul Aziz al-Saud's Islamic Middle East Gallery, presenting visitors with a time-lapse of the achievements and transformations in this medium between the seventh and the nineteenth centuries from North Africa to Afghanistan.

Until 2013 an impressive luster bowl from this bequest occupied a prominent spot in the installation, in a section dedicated to fritware (or stonepaste) and its rise as the medium of choice for both underglaze and overglaze decoration (fig. 1 [a and b]). However the bowl's deformed profile and uneven signs of wear singled it out as an object with more than one story to tell. Conservation work undertaken in 2008 in preparation for the reinstallation of the Ashmolean collections in the Rick Mather expansion had already uncovered extensive overpainting, applied in a previous restoration in order to conceal the bowl's fragmentary state and improve appearance.[4] UV examination later confirmed that the object consisted of 158 fragments, with many of the break edges in the joins showing little or no contact, or appearing slightly misaligned (fig. 2 [a and b]). The curator of Islamic art at the time, Oliver Watson, also identified discrepancies in the style of the epigraphic band decorating the rim. Examined under a microscope, parts of the inscription appeared to be copies of text available elsewhere on the bowl, yet cold worked after firing and blended in with the original section through careful retouching (figs. 3 and 4). In spite of this, the decoration appeared remarkably coherent and the sequence of fragments virtually uninterrupted on either side of the bowl, thereby ruling out the possibility that the object was a pastiche of sherds taken from multiple medieval vessels, as attested on a number of repaired Islamic wares including examples in the Ashmolean collection.[5]

These various interventions highlighted a complex history of "restoration" that made the bowl an ideal candidate for an extended analysis designed to assess the extent of its genuineness. Such an investigation not only promised to add another layer to the thorny question of authenticity of museum collections, in general,[6] and the challenges posed by Islamic ceramics, notorious for their extensive repairs, in particular.[7] But it also had the advantage of building on a number of recent case studies produced by conservators and curators in several international institutions,[8] and, thus, contribute to the on-going debate about the roles and responsibilities of traders, dealers, and early collectors in shaping Western collections of Islamic art.[9] Due to time and financial restrictions, in 2008 the museum conservators were only able remove the restoration materials covering the original surfaces and stabilize the bowl (fig. 5 [a and b]). It was in 2014, thanks to the support of Gilliane and Richard Sills, that a more systematic examination, which was carried out as a collaboration between the University of Oxford and Cranfield University, could be undertaken.[10] This article presents the results of this joint effort, and offers conclusions that broaden our understanding of the faking and forging of Islamic artifacts when collecting them in Europe was at its peak.

BACKGROUND

Before being dismantled for treatment and examination in 2014, the bowl was one of the largest Islamic luster vessels available in any public collection.[11] Measuring an impressive 49.5 cm in diameter, this large conical salver with flaring sides and everted rim is decorated with a continuous frieze of seated couples against a dense background of vegetal scrolls and epigraphic bands combining Arabic and Persian verses (see Appendix). On the reverse are interlocking roundels inscribed with a motif named by Robert Mason "ray-dot circle."[12] With its bold moon-faced figures and textured backgrounds the decoration exemplifies the so-called "Kashan style," which marked the aesthetic and technical zenith of early thirteenth-century Persian lusterware production.[13] Other diagnostics – the half-palmette leaves, the combination of painted and scratched motifs, the execution of figures in reserve against the luster background – situates the object amongst those that contributed "to show off the lustre technique at its most brilliant," and one that is hardly achievable in other techniques, as noted by Watson.[14] The bowl could thus be considered another successful outcome of a technique which became globally famous for its complex processing and elusive results. So much so that in his 1558 treatise on ceramics, an essential source on Italian *maiolica*, Cipriano Piccolpasso remarked on the enchanting yet "treacherous" (fallace) nature of luster making, "for oft times of 100 pieces of ware tried in the fire, scarce six are good (…)."[15] Reviewing the key-aspects of its process and of the challenges accompanying its execution may thus be useful at this point, none the least to add perspective to the results of the analyses conducted on the bowl to be discussed in the next section.

Luster painting is an overglaze decorative technique realized with a pigment containing metallic compounds. Copper and silver oxides are the main ingredients of this mixture in addition to a diluting medium, mainly clay, which protects the pigments and eases the process of reduction.[16] This mix is applied on previously glazed and fired vessels, which are then subjected to a second firing at a temperature between 500° and 600° C.[17] The introduction of wood and other combustibles in the kiln triggers the production of carbon monoxide, which attracts the oxygen present in the metal oxides causing the precipitation of the metallic particles and their subsequent adherence to the surface of the glaze.[18] As a result of this process a thin metallic layer is left on the surface of the object, revealed in its full sheen after it is polished.

A great number of factors play a role in the successful execution of the luster-painting technique. In terms of substances, just to mention one of the more controllable variables in the whole process, the ones included in the glaze, their concentration, and their status (i.e., finer or coarser) are as relevant as those present in the actual metallic mixture.[19] The percentage and ratios of fluxes in the glazes, in particular, have a direct effect on the lustring temperature amongst other aspects.[20] As for the metallic compounds included in the mixture, their concentration is only partially relevant for the final color, lusterware's most sought-after effect. Color, in fact, is also linked to the wavelength of light and the way this enters the eyes. Its perception therefore is not only dependent on how much light is absorbed or reflected by a substance, but also on the latter's composition. Copper and silver absorb light differently when used in combination rather than in isolation.[21] All of this, added to the thickness of the applied pigment, the level of integration of glaze materials during the first firing (as under-fired glazes behave differently from those that are over-fired), the intensity and duration of the reduction process, the substances employed for the purpose, and the position of the vessel in the kiln produce a huge range of variations.[22] Available evidence in museums and from excavations reflects both the broad results obtained in luster-making and the changing criteria that determined quality and success across time and space.[23]

If consistent appearance of the body and glaze of luster vessels can be reproduced with credible approximation at least to the naked eye, therefore, the distinctive metallic film found on their surface, its color and characteristic iridescence are an entirely different endeavor. This requires deep knowledge not only of a highly complex method and its secrets, mainly preserved in the Islamic tradition through personal transmission rather than by way of standard manuals, but also of the minute variations caused by external and hard-to-control factors.[24] In this luster-painting differs from the equally prized overglaze technique known as *mina'i*, which however time-consuming and similarly complex, has been replicated with considerable degree of success, as examinations of restored Islamic vessels painted in this technique have recently demonstrated.[25] What the analyses conducted on the Ashmolean bowl revealed, more significantly, is that traditional knowledge and production of fine lusterware were not only alive in the early twentieth century, but that they could also be geared towards the production of impressive "restorations" designed to sustain the growing interest of Western collectors in the medium of ceramics.[26]

2014 EXAMINATION

In 2014 the Ashmolean Museum was in the fortunate position to research and further conserve the bowl building on the work undertaken in 2008. In particular, the main objective of the new investigation was to determine whether the sherds were all original to the thirteenth century vessel having proven its composite nature. Within that remit a number of other aims were identified, and these included reassembling the fragments in closer alignment to reflect the original shape and improve stability; determining the composition of each type of fragment; identifying the restoration materials; and, ultimately, understanding the object's history.

The object was dismantled and cleaned in January 2014.[27] As each sherd was removed, the original location was marked on an image of the bowl. The individual fragments were then cleaned under a microscope using a combination of mechanical cleaning and solvent with deionised water and acetone applied with cotton swabs. The fragments were subsequently photographed and bagged individually with associated numbers. As the vessel came apart it became clear that it consisted of two distinct fabrics. The first body type, making up about 60% of the vessel (upper half), is coarse, light pink and contains black inclusions; the second body, found in the lower half, has a finer and whiter texture with fewer inclusions. Present on the bowl were also five types of adhesives, three fill materials, paint, staples (rivets) and an orange powder found in some of the joins. Some fragments of both body types appeared to have been ground or sanded down on the edges. Due to the amount of adhesive and filler on the surface, however, it was not possible to assess the extent of such intervention before dismantling and cleaning. Therefore, notes and samples of the adhesives were kept as the sherds were cleaned.[28]

A close examination of the white sherds revealed that they are "fired restorations" rather than fragments taken from other medieval vessels and used to restore an incomplete object, as more frequently observed in the case of Islamic lusterware.[29] A number of elements support this claim. The size of the bowl was unusually large making it highly unlikely to find fragments of such proportions, body type, and decoration to match and reconstruct the original vessel. In addition, the joins between the fragments in the largest area of the restoration appeared very tight with almost no wear or degradation. It would seem that this section was fired to match the extant part and then intentionally broken to give it a degraded, and thus more consistent, appearance to that of the original fragments. Figure 6 shows that the location of the ground edges on the original sherds was always adjacent to the restoration sherds. The orange powder deposits also appeared along these same edges and only where they were filed down. A grey fill material was found in these same spots, and specifically where the majority of the other joins had been bonded with translucent brown adhesive, possibly animal glue. Unsurprisingly one of the weakest joins in the bowl was between the two halves, where the pink and white body types met. The fracture ran through the center of the bowl and was already moving in 2008 when it was initially treated. This join also revealed the presence of a third adhesive, possibly a type of PVA (polyvinyl alcohol), which appeared white and elastic when softened with water. As this weak area is likely to have failed in the past, this substance may well be the trace of a subsequent attempt to stabilize the object. Evidence of shellac or similar adhesive was also found along a large firing crack located on the border of the original section of the bowl. In this same area are also traces of at least two large iron staples, which would have once spanned it. The clips were introduced soon after manufacture to stabilize the vessel and therefore predate the burial and subsequent fired restorations.

The evidence produced by these preliminary observations led the team to broaden the search in order to determine the composition of the bodies, glazes, and lusters on both parts of the bowl. A similar examination was also undertaken on another luster vessel in the Ashmolean collection, carrying the production date 1207–08 and the signature of the most famous medieval Kashan potter Abu Zayd,[30] in order to obtain an additional and authentic term of comparison for early thirteenth century Iranian lusterware that could corroborate the composition, time and place for the genuine part of our bowl (fig. 7).

X-RAY FLUORESCENCE ANALYSIS

During the summer of 2014 micro-X-ray fluorescence analysis was carried out on 24 of the 158 sherds, drawn from both the original and the restoration parts of the Ashmolean bowl (fig. 8), and a dated fragment from Abu Zayd's dish at Cranfield University, Shrivenham. The aim of the analysis was to establish the major and minor elements in the composition of all bodies, glazes and lusters, and, successively, to identify any compositional groups that could help to differentiate sherds made from different materials. XRF was chosen as a non-invasive screening technique, which could then inform sample sites for further analysis.

The sherds were analyzed using a Seiko SEA6000 benchtop micro-XRF in a helium environment for optimal detection of light elements.[31] A measurement time of 100 seconds at 50 kV and 1000 μA was used for all analyses. The analysis area was set to 1.2 × 1.2 mm and one or two analyses were conducted on the body, glaze, and light and dark brown colored luster of each sherd. Analyses of the bodies were taken from flattest area of the cross section edge, while the glaze and luster measurements were taken on flat sections of the inside and outside surfaces. The peak intensities of identified elements were then processed and plotted in scatter plots and ternary diagrams in Excel in order to identify compositional groupings. Results for bodies, glazes and lusters are presented in figs. 9-13.

Bodies

The bodies of the sherds from the bowl and the dish all comprise of silica, lime, alumina, potash, iron, lead and titanium with traces of rubidium, strontium, zirconium. The bodies of the majority of sherds from the Ashmolean bowl fall into two main groups based on calcium and iron counts (figs. 9 and 10); high calcium and high iron (Group 1), and low calcium and low iron (Group 2). Three sherds (4, 98 and 154) have a similar composition to the high iron group (Group 1), but have slightly higher calcium counts, which may be due to localized lime in the analysis area.[32] The dated sherd from Abu Zayd's dish fits most closely with the high calcium, high iron group (Group 1), but has slightly higher calcium counts. The differences in iron content observed in the two main groups are illustrated in Figure 10. Not surprisingly, sherds in Group 1 with high iron all have the pink colored bodies, whereas white sherds all fall into the low iron group (Group 2).

Glazes

The glazes from both vessels consist of silica, lead, tin, potash and iron.[33] The glazes of the sherds from the Ashmolean bowl can be subdivided into two clear groups (figs. 11 and 12); low lead and high tin (Group 1), and high lead and low tin (Group 2). The dated sherd from Abu Zayd's dish fits closely within the low lead and high tin group (Group 1).

Luster

The dark brown and light brown luster were found to be colored by copper and iron. Silver was not detected.[34] As shown in Figure 13, there are two distinct groups of light and dark lusters; those with a high copper and high iron counts (Group 1) and those with low copper and low iron counts (Group 2). The difference in counts may be attributed to the thickness of application, i.e. the low counts observed in Group 2 lusters derive from a thin layer of luster. Interestingly, both light and dark lusters in each group have similar counts of copper and iron, which suggests that other chemical components may have caused the shade difference or that light areas represent degraded dark luster that may have discolored during the manufacturing process including refiring. The dated sherd from Abu Zayd's dish exhibits high copper and iron, and as such fits well with Group 1.

The compositional groups within the 24 sherds originating from the Ashmolean bowl are summarized in Table 1. Table 2 presents these divisions by sherd in order to show which fragments fit into common body, glaze and luster groups, and draw important conclusions. Body 1 is only found with Glaze 1 and Luster 1, and this combination is only present on sherds that are thought to be original. Body 2 is only found with Glaze 2 and Luster 2, and this combination is only attested on sherds that are thought to be later additions. As expected, the dated sherd from Abu Zayd's dish has a glaze, luster, and body type that are most consistent with those of the original sherds from the bowl. The XRF analyses, therefore, corroborate the initial observations, confirming that the two principal groups of sherds are distinguished by composition. The sherds thought to be original have consistent composition within the group and with the dated sherd from Abu Zayd's dish. It is thus also reasonable to assume that these sherds are contemporary with it, i.e. early thirteen century. The sherds that are thought to be later additions have a consistent body, glaze and luster type, with the exception of the bodies of sherds 4, 98 and 154, which showed distinctly higher lime context. However, as the glaze and lusters of these sherds fit with the rest of the modern fragments, the high lime content may be due to XRF spot targeting a lime rich area of the body.[35] The consistency of this group also indicates that the later sherds derive from a single ceramic object, rather than a mixture of different objects. The examination therefore confirms that the Ashmolean bowl consisted of two ceramic objects that have been put together to form one.

SCANNING ELECTRON MICROSCOPE

In the spring of 2015 Scanning Electron Microscope analysis was carried out at the Research Laboratory for Archaeology and the History of Art, University of Oxford, in order to examine the microstructure and chemical composition of the two sherd types identified above, determine the technologies employed, and suggest the time periods of production. Two samples, labelled 3 and 158, were selected as representative of the original section and the repair respectively (fig. 14). Sections through the glaze and into the body were first mounted in Caldofix (Struers) epoxy resin and left in the oven at 75°C for 90 min to set. A flat surface was obtained on the mounts using 320, 800 and 2500 grit SiC abrasive discs and 9, 3,1 and 0.25 μm diamond polishing pastes. A JEOL SEM (JSM-5910) with Oxford Instruments EDS (INCA 300 System) was employed. The system was operated at 20 kV with 120s measuring time, and backscattered electron (BSE) images were obtained in order to study the microstructures. The accuracy of the system was checked by the analysis of the Corning C glass standard. Bulk compositions of bodies and glazes were determined by analyzing areas of approximately 1 mm × 0.8 mm for bodies and 0.5 mm x 0.4 mm for glazes. Average composition of five areas was reported in each case (Tables 3 and 4). Analytical totals varied between 61.2% and 75.1% for bodies and between 98.4% and 102.5% for glazes.

Body

Sherd 3

Table 3 shows the composition of the body with 2% CaO and 1% FeO, matching the body Group 1 suggested by micro XRF analyses. Quartz grains are variable in size and may be up to 400 μm in diameter. They are poorly sorted, sub-angular in shape with diffused boundaries (fig. 15 [a]). Glass fragments, normally between 125 and 250 μm in diameter, account for the second dominant inclusion. During the firing process, the glass is diffused in the body, leaving holes, often with concave boundaries, surrounded by a vitrified halo. Analysis of the frit glass fragments was impossible as they were mostly lost. However, from the analysis of the surrounding halo, it is obvious that the glass was of alkaline composition.

Sherd 158

Table 3 shows the composition of the body containing 1% CaO and 0.4% FeO (see body Group 2 above). The fabric of this second body type is finer grained than that of sherd 3. Quartz grains are sub-angular and are less than 400 μm in diameter (fig. 15 [b]). Sharp boundaries of quartz grains, as well as the limited extent of vitrification phase also suggest that the body was under-fired. Glass fragments are significantly small, normally around 20 μm in diameter, and hence must have been ground before being added to the body paste. Fine grinding of frit fragments could have increased their dispersion in the body. This, in turn, resulted in a more extensive glass phase that bounded grains together. The frit, remained in-situ in some cases due to under-firing, is of high lead composition, consisting primarily of 47.3% PbO, 24.6% SiO_2, 13.7% CaO and 8.8% Al_2O_3.

Glaze and Interaction Layer

Sherd 3

The original glaze is of lead-alkali type with 21.5% PbO and 10.8% Na_2O+K_2O, opacified with 9% tin oxide (Table 4). The composition fits well into the glaze Group 1 as analyzed by micro XRF and might be interpreted as an essentially alkaline glaze, opacified by the use of a lead-tin calx. Air bubbles are retained in the glaze layer, a fact that may contribute to its hazy appearance. Glaze thickness varies around 350 μm (fig. 16 [a]). The body-glaze interaction layer has well defined boundaries and is about 50 μm in thickness.

Sherd 158

The glaze on the restored fragment contains significant amounts of lead oxide (61.5 % PbO, Table 4; see glaze Group 2 above). Opacification is achieved by 5.5% tin oxide, the particles being smaller in size than those in Sherd 3 (fig. 16 [b]). The thickness of the glaze is evenly distributed about 170 μm but is almost negligible for the body-glaze interaction layer. Despite the use of fine-grained lead rich glass fragments in the body of sherd 158—as opposed to the alkaline fritted body of sherd 3—the extent of vitrification is very limited. This, together with the lack of interaction layer, suggests a lower firing temperature and shorter soaking time (i.e. the period of time at which the maximum temperature is maintained) in sherd 158.

It may be worthwhile, in summary, to review some aspects of the chemistry of luster production. Replication studies conducted in 2005 and 2007 have shown that the luster decoration is produced by the ionic exchange between the alkali ions of the glaze and the copper and silver cations of the luster layer.[36] Luster glazes must therefore contain alkalis in order to enable the introduction of copper and silver. The use of lead in the glaze composition, on the other hand, is fundamental for the metallic shine. Therefore, glazes over which luster decorations are applied must contain mixtures of alkalis and lead.[37] The glazes on Sherd 3 and Sherd 158 are significantly different in composition. The lead-alkaline glaze of Sherd 3 fits into the typical medieval Iranian lusterware glazes. Sherd 158, instead, contains an abnormally high lead content and does not match any of the compositional categories of historical lustrewares. This suggests that Sherd 158 is likely to be a modern production. The fine grinding of the body frit and the use of very high lead containing glaze are in fact unknown in the lusterware productions before the eighteenth century, which offers a *terminus post quem* for the execution of the fired restoration.

BOWL'S TIMELINE

The investigation and treatment of the Ashmolean bowl has been an opportunity to gain further insight into its complex history, whose main phases can be summarized as follows. The bowl was first produced in Iran, most probably in Kashan, in the early thirteenth century according to traditional methods. It was wheel thrown, as throwing and trimming marks indicate, before being glazed and fired. Possibly because of its considerable size, the vessel developed a small crack at the rim during the first firing. This aspect, however, was either unnoticed by the potter or considered an acceptable flaw, given that an elaborate pictorial and epigraphic program in luster was painted on its surface before a second firing occurred. While obtaining the desired lustrous effect, the firing also caused the above-mentioned crack to increase, as melted glaze and luster around its edges reveal. The fissure, which extended at least 5 cm from the rim of the bowl, was at this point secured with metal staples or loops, and filled with shellac, which was either applied before or at the same time as the metal fittings. This tells us that the vessel was not discarded but went on to be used in some capacity.

At some point the bowl broke and was buried. It is clear that the breaks preceded the burial because chemical degradation is present on the cross sections, in addition to appearing unevenly around the surface of the object. Approximately 60% of the vessel was retrieved under unknown circumstances sometimes in the early twentieth century, if not earlier. A fired restoration was made at this point to replace the missing parts and produce a new, complete object. This was not only done for profit, but likely on commission and, possibly, with a recipient in mind, given the expertise and resources involved. It is plausible that the fired restoration started as a wheel thrown bowl, similar to the original. At the same time, given the limited plasticity of stonepaste, it is also possible that a plaster mould based on the original section was created, and used to make the repair. The replica was then covered with tin-opacified glaze, fired, and broken into a few fragments, which were ground down to fit the lost areas of the thirteenth century bowl.[38] Once fitted these areas were painted with luster, removed and then fired a second time following the reducing traditional method.

While the surface of the new fragments was likely polished in the usual manner, a number of sherds also show evidence of mechanical abrasion probably applied to distress their appearance. Furthermore, the glaze melted over the edge of the four main sections of the fired restoration indicating that these fragments were re-fired, possibly in an attempt to adjust the color or improve the appearance of the overall design. Once this process was completed, these sections were systematically broken again into smaller sherds as a way to imitate the size of the thirteenth century fragments. Further adjustments to optimize the use of the newly fabricated fragments, and possibly resolve issues caused by shrinkage during the firing processes, also appear to have been deployed. While rejoining the largest component of the fired restoration, which makes up nearly 40% of the vessel's wall, for redisplay, it became evident that this section was the product of three carefully aligned parts. Two of these have tight joins and have been systematically broken to match the distressed condition of the original fragments, while a third, wedge-shaped fragment has been fitted between them, allowing for changes in position that could improve the bowl's overall profile (fig. 17).

After the newly fired ceramic fragments were complete, the object was finally bonded with water-soluble animal glue. Gaps around the restorations that were inserted into the wall of the medieval section of the vessel were then filled with a grey fill material. The orange lead based powder was added to these joins too, although the reason for its addition remains unclear. Many of the smaller gaps were also repaired with plaster and large plaster fill was cast at the rim adding to the distressed appearance of the fired restoration. The joins and fills were finally extensively hand painted to obscure the condition of the object and visually integrate the fills and fired restorations. This is how the bowl presumably arrived in Alan Barlow's hands.

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Research on the circumstances of the bowl's purchase and provenance history has so far yielded limited results, hindering, in turn, any argument that can be proposed about the individuals involved in the restoration and, most of all, the place where it took place. More than a conclusion, therefore, these final remarks offer a series of considerations that could drive future research efforts aiming to establish whether the Ashmolean salver is an exceptional one-off or, given the remarkable result achieved, the trace of a more established enterprise that is yet to be uncovered.

The bowl's earliest published mention occurs in the short catalogue accompanying an exhibition of early Islamic wares held at the Oriental Ceramic Society in London from April 26th to June 7th 1950.[39] Here the object is already acknowledged as belonging to the Barlow family, whose acquisitions of Islamic ceramics by that time had already been supplanted by a passion for Chinese wares. As recorded by Géza Fehérvári in his comprehensive study, in fact, the Islamic collection was almost complete when the *Exhibition of Persian Art* took place at Burlington House in 1931, with most purchases made between 1905 and 1926.[40] A further indication of the fact that the bowl was already in Barlow's possession by the early 1930s is offered by what might have been the original collection number. This occurs on round stickers marked with a P and a sequential number appearing on most of the Barlow ceramics in the Ashmolean collection.[41] Objects that were included in the Burlington House exhibition and the associated publication *A Survey of Persian Art*, published in 1938, carry numbers that are higher than the one appearing on the bowl considered by this study.[42] If these were applied sequentially and at the time of acquisition, rather than during a subsequent renumbering of the collection, they could confirm 1926 as *a terminus ante quem* for the bowl's arrival into Barlow's collection. Future investigations concerning the production of high quality luster forgeries could in this case prioritize objects circulating during the early decades of the 20th century, when collecting Persian ceramics was reaching its highest point.

Such an investigation should, in particular, consider both collectors and dealers of Islamic, and more specifically, Persian ceramics, and examine their activities in Iran as well as links, in Europe, with centers of luster production and luxury forgeries. Study of twentieth century luster production in Iran is also an area that requires exploration.[43] The skill shown in the execution of both the fired restoration and the newly complete bowl, added to the mastery and attention to detail visible in the decoration and inscription of the new section (possibly the only area where the faker's skill could be challenged) point to a maker familiar with and fully conversant in the Persian decorative language employed on the ceramic medium. This fact could ultimately be a pointer to the place of production of the repair, that is, Iran, forcing us to reconsider the alleged loss of knowledge and expertise suggested by recent observers, and to investigate the involvement of local craftsmen in the injection of fakes and forgeries into the Western market.[44]

Last, but not least, other elements of the analysis conducted at the Ashmolean and Cranfield University but set aside as not essential at the time – from the adhesives documented on the bowl, to the high lead content found in the glaze of the fired restoration, its body composition and their relation to nineteenth and twentieth century lusterware production both in Iran and Europe – could be compared with information obtained by related studies, and the combined data be used to circumscribe the chronological and geographical span of these forgeries. In particular, examinations of Islamic luster vessels with characteristics comparable to Barlow's bowl held in international collections could produce crucial significant information about the circumstances and individuals involved in procurement and circulation of inauthentic artifacts, exposing the network that sustained it. The authors of this article hope that their findings will stimulate others to undertake similar analyses in order to enrich not only the history of public collections, but also current knowledge of the range of challenges that have accompanied, and continue to accompany, the collecting and care of antiquities.

AFTERWORD

It was decided that redisplaying the Ashmolean bowl with a summary of the findings of our research project would provide a stimulating case study and an excellent addition to the permanent display of Islamic fakes and forgeries. The decision on how to reassemble and present the object was based on the information gained from visual and microscopic examination, XRF and SEM-EDX analysis. Due to the complex nature of the vessel, in particular, the decision was made to reassemble it by keeping the two body types separated, and opting for minimal filling and no retouching (fig. 18).[45] Less harmonious and elegant at first sight, this presentation nonetheless manages to attract a great deal of public attention, drawing visitors to the complicated life of the vessel and to the range of activities taking place "behind the scenes" of the museum.

APPENDIX

TRANSCRIPTION AND TRANSLATION OF THE INSCRIPTIONS ON THE BOWL (by Dr. Manijeh Bayani)

Around the rim, starting from the plaster repair, anticlockwise

(a poor copy of different parts of the original text):

...سر بر زلفش نوشتم
اي دل تو همان شيفته و ناداني
... ... كي تر ... كني ز ... (؟)
در حلقه
... يبقي و ان طال الزمان به
... (؟)

Original text:

... خود ز حلقه ... (؟)

"...itself from the ring of [your hair?]..."

Original text:

[الخير] يبقي و ان طال الزمان به
و الشر اخبث ما اوعيث من زاد

"The good remains no matter how much time passes, and evil is more wicked than you could imagine".[46]

Original text:

... گفتي اي ... دل ... (؟)
... ... باز ستانم و ز محنت رستم
يك لحظه چو در پيش رخش بنشستم
جان ... چو دل در سر زلفش بستم

"... you said O... heart...
... will get it back and would be rescued from affliction
sitting before her for a moment,
I tied [my] soul... heart, on her hair"

Original text:

اي دل تو همان شيفته و ناداني
هر بد کي تو مي کند ز ... (؟)

"O heart you are the same enamored and ignorant one
whatever evil you commit is from… "

(copy of the original text):

... چو در حلقه ... يبقي

Around the base:
Original text:

... ود چون گيرند
سنگ خار گهر تو

"…as they take (?)
the *khar* stone [is?] your essence…"[47]

(copy of the original text):

... ود چون گيرند
سنگ خار گهر تو

Original text:

... تو بر کشند

"… of yours to take (?)"

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NOTES

[1] The phrase "illusion of an authentic experience" is borrowed from Laura Van Broekhoven, "Authenticity and Curatorial Practice," in *Creating Authenticity: Authentication Processes in Ethnographic Museums*, ed. Alexander Geurds and Laura Van Broekhoven (Leiden: Sidestone Press, 2013), 151–61, 157.

[2] Sir Alan Barlow, "The Collector and the Expert," *Transactions of the Oriental Ceramic Society* 14 (1936–1937): 87–102, 88.

[3] The donation comprised over 50% of the Islamic material purchased by Barlow throughout his life. Other specimens were donated almost at the same time to the British Museum and Victoria and Albert Museum in London, and to the Fitzwilliam Museum, Cambridge. Ottoman ceramics, mostly Iznik ware, remained with the family until their sale through Bonhams in the early 2000s. See http://www.barlowgenealogy.com/england/royalty/SirAlan.htm, accessed on 8 May 2017.

[4] The paint extended at least 1 cm across the original surface adjacent to each join.

[5] See below, pp. 10–15.

[6] See the already cited volume by Geurds and Van Broekhoven, *Creating Authenticity.*

[7] Oliver Watson, "Fakes and Forgeries of Islamic Pottery," *The V & A Album* 4 (1985): 38–46; idem, "Fakes and Forgeries in Islamic Pottery," *Oriente Moderno* n.s. 23,2 (2004): 517–39; idem, "Authentic Forgeries?" in *Creating Authenticity*, 59–71.

[8] Amongst the most significant ones are Meg Loew Craft, "A Visual Review of Compensation Philosophies for Islamic Ceramics," *Objects Specialty Group Postprints* 2 (1994): 73–88; Holly Salmon, "A Comparative Analysis of Lusterware from the Calderwood Collection of Islamic Art" (unpublished conservation report, Straus Center for Conservation and Technical Studies, Harvard Art Museums, Cambridge, Mass., 2003); Kirsty Norman, "Restoration and Faking of Islamic Ceramics: Case Histories," in *Ceramics from Islamic Lands*, ed. Oliver Watson (London: Thames and Hudson, 2004), 69–89; "Conservation Project 8—Mosaic Tile," Shangri La: A Center for Islamic Arts and Cultures, 2005, http://www.shangrilahawaii.org/ Conservation—Preservation /Conservation-project-8—Mosaic-tile/, accessed 13 April 2017; Keelan Overton, "From Pahlavi Isfahan to Pacific Shangri La: Reviving, Restoring, and Reinventing Safavid Aesthetics, ca. 1920–40," *West 86th: A Journal of Decorative Arts, Design History, and Material Culture* 19, no. 1 (2012): 61-87; Anthony B. Sigel and Mary McWilliams, "History in Pieces: Conservation Issues in Islamic Ceramics," in *In Harmony: The Norma Jean Calderwood Collection of Islamic Art*, ed. Mary McWillams (Cambridge, 2013), 37–50; Blythe McCarthy and Renata Holod, "Under a Microscope: The Examination of the Siege Scene Plate," Freer Sackler Research Online, 2012; http://www.asia.si.edu/ research/articles/minai-battle-plate.asp, accessed on 3 March 2017.

[9] For instance, on the controversy surrounding Arthur Upham Pope and his museum consultancies, see the recent volume *Arthur Upham Pope and a New Survey of Persian Art* edited by Yuka Kadoi (Leiden and Boston: Brill, 2015). For a recent discussion on the role of dealers in the acquisition of Persian luster for the Victoria and Albert Museum, London, see Moya Carey, *Persian Art Collecting the Arts of Iran in the 19th Century* (London: V&A Publishing, 2017), esp. 69–116.

[10] The donation supported the costs of examination, treatment and final reassembling of the bowl.

[11] A useful list of similar oversize vessels available in European and American collections is provided in McCarthy and Holod, "Under a Microscope". Interestingly all but one are painted in luster, and some appear reconstituted fragmentary bowls.

[12] Robert J. T. Mason, *Shine Like the Sun: Lustre-Painted and Associated Pottery from the Medieval Middle East* (Costa Mesa: Mazda Publisher, in associated with Royal Ontario Museum, 2004), 125 and 149, fig. 6.5, motif KL.17.

[13] Oliver Watson, *Persian Lustre Ware* (London: Faber and Faber, 1985), 88–108.

[14] Watson, *Persian Lustre*, 88.

[15] Cited in Alan Caiger-Smith, *Lustre Pottery: Technique, Tradition and Innovation in Islam and the Western World* (London: Faber and Faber, 1985), 214. Comparisons between Abu'l-Qasim and Piccolpasso's texts indicate that Islamic and Italian lusterwares were prepared following analogous recipes. S. Padovani et al., "XAFS Study of Copper and Silver Nanoparticles in Glazes of Medieval Middle-east Lustreware (10th-13th century)," *Journal of Applied Physics* 83 (2006): 521–8, 521.

[16] The often-quoted 1301 treatise by Abu'l-Qasim, the *'Arayis al-jawahir wa nafayis al-atayib*, provides specific quantities for the compounds recipes used in "the enamel of two firings," which is how luster is described, see James Allan, "Abu'l-Qasim Treatise of Ceramics," *Iran* 11 (1973), 111–20, esp. 114, paragraph 27. Prior to it, Muhammad al-Jawhari al-Nishapuri's *Jawharnama-yi Nizami*, composed in 1196, offered alternative recipes; see Yves Porter, *Le prince, l'artiste et l'alchimiste: la céramique dans le monde iranien, Xe-XVIIe siècle* (Paris: Hermann, 2011), esp. 98–106 and 242–51. A detailed discussion on the various ingredients employed in this technique can also be found in Caiger-Smith, *Lustre Pottery*, 203–6.

[17] Abu'l-Qasim indicates that the kiln is "specially made for this purpose" and that the vessels receive "light smoke for seventy-two hours until they acquire the color of two firings [which is like gold]," Allan, "Abu'l-Qasim's Treatise," 114. This low temperature, lower than in Spanish or Italian lusterware, was enough for the reduction process due to the presence of alkali in Eastern Islamic glazes, Alan Caiger-Smith, "Ceramic Lustre," *Ceramic Review* 219 (2006): 51–3, 52.

[18] The consequences of extended firing after the glaze begins to soften are discussed by Caiger-Smith, *Lustre Pottery*, 207–8. In particular, he draws attention to the fact that rather than adhering to the surface, the film of reduced metal is absorbed into the glaze producing a dull result. Yet recent research has also shown that the luster layer does not sit on the outer surface of the glaze. As observed by Caiger-Smith, "during the periods of reduction, a very fine layer of colorless glaze, between 10 and 20 nanometres thick, develops on the outermost surface above the lustre film," "Ceramic Lustre," 52.

[19] Caiger-Smith, *Lustre Pottery*, 198–203. See also I. Borgia et al., "Characterisation of Decorations on Iranian (10th-13th century) Lustreware," *Journal of Applied Physics* 79, no. 2 (2004): 257–61 and T. Pradell et al., "Ionic-Exchange Mechanism in the Formation of Medieval Luster Decorations," *Journal of the American Ceramic Society* 88, no. 5 (2005): 1281–9.

[20] This and the following technical explanations, are addressed in some detail by potter and scientist Frank Hamer in the final section of Caiger-Smith's *Lustre Potter*, 221–36.

[21] For other factors and a summary of some of the most frequently observed side-effects in Kashan luster, see Oliver Watson, "Persian Lustreware from the 14th to the 19th Centuries," *Le monde iranien* 3 (1975): 63–80, esp. 64 and Watson, *Persian Lustre*, 34–6.

[22] Observations on the relations between ratios of copper and silver and the color of the luster appear in S. Padovani et al., "Copper in Glazes of Renaissance Luster Pottery: Nanoparticles, Ions and Local Environment," *Journal of Applied Physics* 93 (2003): 10058–63 and S. Padovani et al., "XAFS Study of Copper and Silver Nanoparticles."

[23] Mehdi Bahrami, "Contribution à l'étude de la céramique musulman en Iran," *Athar-e Iran* 2 (1938): 209–29, 225–9, figs. 141–43; Mehdi Bahrami, *Gurgan Faiences* (Cairo: Le scribe egyptien, 1949), 97 and 123–5; Mohammad Y. Kiani, "Recent Excavations in Gurgan," in *The Art of Iran and Anatolia from the 11th to the 13th Century*, ed. William Watson (London: University of London School of Oriental and African Studies, 1975), 126–33; Oliver Watson, "Lustre Wasters: Attribution, Provenance and Art Historical Politics," in *Sifting Sands, Reading Signs: Studies in Honour of Professor Géza Fehérvári*, ed. Patricia Baker and Barbara Brend (London: Furnace Pub., 2006), 231–49; Alison L. Gascoigne and Rebecca Bridgman, "Pottery from Jam: A Medieval Ceramic Corpus from Afghanistan," *Iran* 10 (2010): 107–51, 118.

[24] Initially utilised on glass, lustre was first applied to ceramics in ninth century Iraq, before traveling to Egypt, and then spreading again westwards to North Africa and Iberia, and eastwards to Syria and Iran. The complexities of the technique suggest that it remained a monopoly of a few, and that these were also primarily responsible for its transmission; Watson, *Ceramics from Islamic Lands*, 38–40.

[25] See the already cited study of McCarthy and Holod, "Under a Microscope" on a Freer *mina'i* dish and a bowl in the Doris Duke Collection of Islamic Art at Shangri La, Honolulu (acc. no. 48.338), which closer examination proved to contain early 20th century *mina'i* repairs; http://www.shangrilahawaii.org/islamic-art-collection/search-the-collection/?id=4399, accessed on 27 April, 2017; and Leslee Katrina Michelsen and Johanna Olafsdotter, "Telling Tales: Investigating a Mina'i Bowl," in *Envisioning Islamic Art and Architecture*, ed. David J. Roxburgh (Leiden: Brill, 2014), 66–87. An earlier example was also discussed by Murray Pease, "Two Bowls in One," *The Metropolitan Museum of Art Bulletin* 16, no. 8 (1958): 236–40.

[26] This is somewhat in contrast with the observation of Caiger-Smith who, following a visit to a pottery workshop in Isfahan in 2001, lamented the absence of local knowledge of lusterware and the fear that, by then, the traditional knowledge could have "died out." Alan Caiger-Smith, "Chance Discovery," *Ceramic Review* 196 (July/August 2002): 49–51. More recently, Oliver Watson equally remarked on the scarcity of evidence confirming the continuation of the production of fine luster, even though the chances that it had been completely lost by the nineteenth century is highly unlikely, "Almost Hilariously Bad: Iranian Pottery in the Nineteenth Century," in *Islamic Art in the 19th Century: Tradition, Innovation, and Eclecticism*, ed. Doris Behrens-Abouseif and Stephen Vernoit (Leiden and Boston: Brill, 2006), 333–62, 342.

[27] The joins in the bowl were softened with deionised water applied on cotton strips. In some areas acetone was needed to soften and remove the adhesive used to treat the object in 2008.

[28] After cleaning the location of the ground down edges an orange powder was recorded on images of the fragments; this information was then annotated on an image of the bowl.

[29] See, for instance, a bowl in the Calderwood Collection, Harvard Art Museums, Cambridge Mass. (acc. no. 2002.50.75) which was proven to consist of fragments drawn from eight different lustre vessels (Salmon, "A Comparative Analysis of Lustreware," 24 and figs. 4.6–4.9), or another large salver in the Doris Duke Foundation of Islamic Art (acc. no. 48.148) declared a "pastiche" (Keelan Overton, "Filming, Photographing and Purveying in 'the New Iran'," in *A New Survey of Persian Art*, 363).

[30] For an overview of his work, see Sheila Blair, "A Brief Biography of Abu Zayd," *Muqarnas* 25 (2008): 155–76.

[31] The instrument is capable of analyzing elements from aluminium (Z13) to uranium (Z92).

[32] Further analyses would be needed to confirm the homogeneity of these bodies.

[33] Soda, the typical alkali for Islamic glazes cannot be detected using the XRF instrument.

[34] Silver was below XRF's detection limit.

[35] Further XRF analysis of these sherds would help to confirm this.

[36] Pradell et al., "Ionic-Exchange Mechanism"; J. Molera et al., "Key parameters in the Production of

Medieval Lustre Colors and Shines," *Journal of American Ceramic Society* 90, no. 7 (2007): 2245–54, and, more recently, Trinidad Pradell et al., "Technology of Production of Syrian Lustre," *Journal of European Ceramic Society* 38, no. 7 (2018): 2716–27.

[37] Three compositional categories have been distinguished: low lead content ($PbO<15\%$), medium lead content ($15\%<PbO<35\%$) and high lead content ($35\%<PbO<55\%$). The earliest lusterwares of the ninth century, produced probably in Iraq, contain low and very variable lead contents. High-lead glazes are typical of the Egyptian production from the tenth century. Syrian luster glazes, on the other hand, are essentially alkaline, and lack any substantial content of lead, and hence, less pronounced metallic shine. Medieval Iranian luster glazes generally fit into the medium lead compositional category. See Mason, *Shine like the Sun*, 128–36 and T. Pradell et al., "Technology of Islamic Lustre," *Journal of Cultural Heritage* 9 (2008): e123–28, 125.

[38] Some of the edges of the original sections were also filed down to accommodate the repairs.

[39] Arthur Lane, "Catalogue of an Exhibition of Early Islamic Wares," *Transactions of the Oriental Ceramic Society* 25 (1949–50), cat. no. 117 and pl. 31.

[40] Géza Fehérvári, *Islamic Pottery: A Comprehensive Study Based on the Barlow Collection* (London: Faber and Faber Limited, 1973), 15. Subsequent acquisitions feature objects from the George Eumorfopoulos collection, which was sold at Sotheby's in June 1940, including a beaker (EA1956.89), two bowls (EA1956.61 and EA1956.165), a ewer (EA1956.74) and a plate (EA1956.125).

[41] EA1956.88 is numbered P108 and is immediately preceded by a large luster dish (EA1956.183) published by Arthur Upham Pope, *A Survey of Persian Art from Prehistoric Times to the Present*, 6 vols. (London: Oxford University Press), 5:pl. 641. Many of Barlow's Chinese ceramics transferred to the Ashmolean Museum in 2001 from the University of Sussex, also carry a similar sticker, but the number is preceded by the letter C.

[42] See, for instance a 10th century plate with accession number EA1956.132, marked as P115.

[43] Already in 1901 C. H. Read, the director of the Victoria and Albert Museum advised to exert great care when collecting "vessels of Persian lustred pottery" whose skillful imitations were already circulating; cited in Watson, "Fakes and Forgeries," 42. Interestingly, the involvement of Armenians as purveyors of this material is mentioned; a reassessment of their role as both dealers and collectors is thus another potentially fruitful trail to follow.

[44] See note 26.

[45] The shards were bonded with a 50% solution of B72 in acetone. Due to the absence of mechanical keys in the vessel wall made from fired restorations B72 was too weak to hold the sections together. The break edges between the three main sections were sealed with 15% B72 in acetone and then bonded with Fynebond (epoxy resin) bulked with Fumed Silica (silicon dioxide).

[46] This couplet is included in the *Kalilah wa Dimnah* (trans. Mujtaba Minuvi [Tehran, 1362], p. 407) and appears on similar lusterware including a Kashan tile in the Victoria and Albert Museum, London (Pope, *A Survey of Persian Art*, 10:726c) and in the Harvey B. Plotnick Collection (Oya Pancaroğlu, *Perpetual Glory: Medieval Islamic Ceramics from the Harvey B. Plotnick Collection* [Chicago: Art Institute of Chicago; New Haven and London: Yale University Press, 2007], cat. no 86).

[47] The *khar*/*khara* stone is a very hard stone that can be translated as granite. This passage could thus mean 'your heart, which is as hard as granite, is your essence…."