University of Delaware
Program in Art Conservation

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Accession #: Not Applicable
Object: Ceramic Plate

Artist/Maker: Unknown (possible Delftware)
Object Date: 1730-1770
Materials: Earthenware (delftware, faience); Tin glaze; hand-painted
Dimensions(cm): 2.5 x 22.8 cm
Distinguishing Marks: None

Reason for Treatment or Examination: ARTC464 Ceramics Conservation Internship Documentation and Treatment Project
Examined by: Rachel Sikes
Consulted: Madeline Hagerman

Treated by: Rachel Sikes
Proposal Report Date: September 25, 2020
Treatment Report Date: December 11,2020

Figure 1 Recto

Description

Structure

This plate is earthenware, which is made by firing clay at lower temperatures (between 1000◦C-1150◦C) than porcelain(1350◦C)(Cushion.1972,18) or stoneware (between 1000◦C-1400◦C).(Cushion.1972,62) Earthenware has a distinct texture/ look and is more porous. After performing a porosity test, where a small drop of water is applied to the exposed sherd edge, I felt more certain that the plate was earthenware, since the material was very porous. The plate thickness and opacity further indicate earthenware.

The overall plate appears to be a perfect circle with border-edge(rim), cheek(lip), bottom-center(well) and the foot.

The foot is shallow and circular. The foot is centrally located to the plate's body providing stability when sitting on a flat surface. (Fig 2)

I was only able to find one specific characteristic that indicated the creation's process, which was the kiln's stacking furniture marks. As seen in Figure 3, there are three telling marks on the bottom of the plate where the plate sat on pegs (tripod-orientation) during the firing process.

Figure 2 Verso

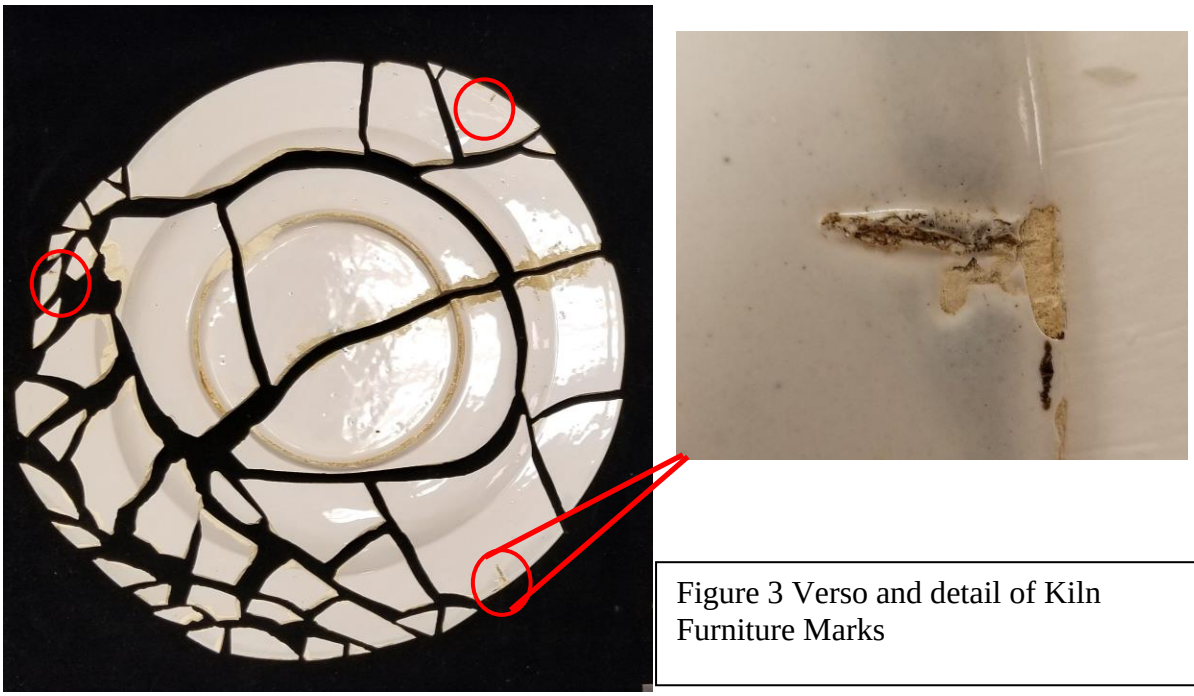

Figure 3 Verso and detail of Kiln Furniture Marks

Glaze and Design

Based on the blue paint and off-white tint of the glaze, I deduced that this plate is a tin-enameled and lead-glazed earthenware, also known as delftware, where the black paint containing cobalt oxide turns blue once fired to mimic the blue and white color scheme of Chinese porcelain.

I did not have access to the equipment that could tell me the exact materials in the glaze. The long-wave Ultraviolet light only illuminated areas of past repairs. Along the underside of the plate (running along a well's sherd's edge and on a portion of the foot & well) is old adhesive residue, which fluoresced a greenish yellow (possibly cellulous nitrate). (Conserve-o-Gram Part II. 2000, 1) (Fig 4) However, the adhesive was not soluble in acetone, so it might not be cellulose nitrate. Additionally, the solubility test revealed that the adhesive was not soluble in deionized water nor ethanol. (Fig 5) It is probably a type of epoxy.

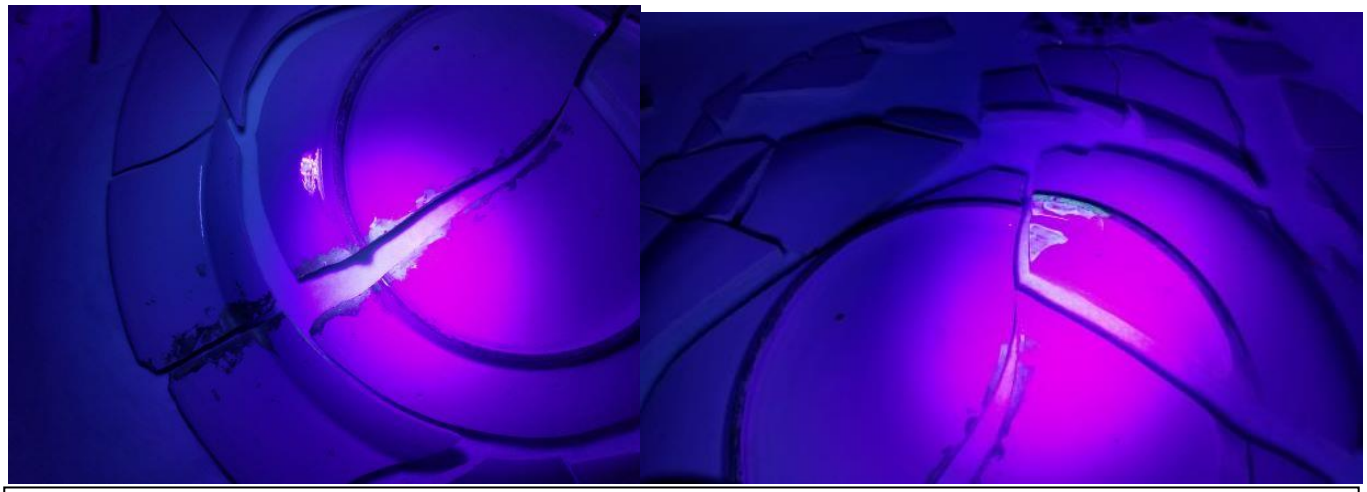

Figure 4 Back of Plate Under Long Wave UV light

Figure 5 Solubility Test (Deionized water, Ethanol, Acetone)

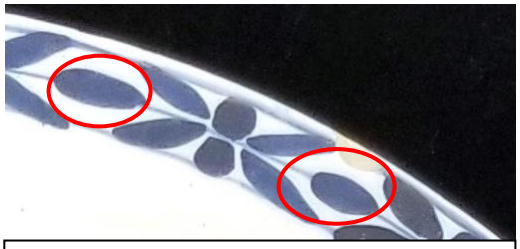

Figure 6 Close-up Detail View of Border

Taking up most of the bottom-center(well) area is a painted botanical scene; including tall grass(bamboo), various types of flowers and what appears to be a sort of bridge in the background. The border-edge has a repeated pattern around the whole circumference. (Fig 1) The inconsistency with lines and size in the border indicates that the plate was hand painted. (Fig 6)

Historical Context

Chinese porcelain was a European craze from sixteenth century through the eighteenth century. For a time "porcelain was the exclusive property of the European courts" (Taraba. 2006, 21) The popularity and demand for porcelain was seen as a great marketing opportunity for the pottery industry. However, no one at the time knew the Chinese recipe in making "China" porcelain. This led to the emergence of hard paste and soft paste porcelain. Hundreds and even thousands of factories were manufacturing these Chinese-influenced ceramics. The downside was that they were expensive to make and purchase. Around 1630, Dutch potters created a tin-enameled and lead-glazed earthenware that was faster to reproduce and cheaper, but still mimicked the blue and white colors of China porcelain. This became known as Dutch Delft (referring to one of the major ceramics producing cities, Delft). Soon, England, also, started to manufacture tin-glaze earthenware, which is called English 'delftware.' English 'delftware' and Dutch Delft have differences in potting and glazes. Mostly, England 'delftware' is duller in shine and is of a lower quality. Eventually, creamware would drive 'delftware' off the market. (Charleston. 1968,166-173)

Plate. Netherlands 1730-1760. Earthenware (delftware, faience); Tin glaze. 1.083 in (H) x 9.045 in (Diam) (2.75 cm (H) x 22.975 cm (Diam)) ACC # 1965.0062.003 Winterthur Museum, Garden, & Library

Plate. England, 1740-1770. Earthenware (delftware, faience); Tin glaze. 1.22 in (H) x 8.898 in (Diam) ((3.1 cm (H) x 22.6 cm (Diam)) ACC#1956.0038.057 Winterthur Museum, Garden, & Library

Materials and Technology

Geritt Paape describe in his book 'The potter or Delftware maker', 1794, the process of making delftware is paraphrased as follows:

> Mixed local clay, fattier clay from Germany, and dry marl together and then purified in a clay washer, where the washery would allow water and clay mixture to pass through a copper sieve that would then be caught in trays, which were than dried and stiffened. Once clay dried, it would be cut into blocks, transported to potteries, and stored in pits. Earth treaders would make the clay soft and pliable again with their feet. After clay was softened throwers and shapers would turn the clay into objects. Plaster molds would be used for repeated shapes. Next the clay is dried further to between cracking in the kiln. Before a glaze was added, the object goes through an initial firing in a kiln at 800-1000◦C. The fired piece would be scrubbed clean by the givers, then dipped in a bath of tin glaze. The tin glaze combined tin, lead, sand, soda, and salt.

Next the bathed object would either get their second firing or be painted (either by hand or a pounce). The paint pigment, cobalt oxide, was mined from Germany and although it appears grey turns blue once fired. If extra gloss was desired, a transparent layer of lead glaze. Subsequently, the object is ready for its second firing (glaze or ghost firing) at 1000◦C. During the second firing, the objects were placed in a sagger and suspended on pegs to prevent fusing and damage. This process could take several days. A third firing, petit feu technique, would also be done at 600◦C for adding colors gold, black, and or red, since those would be burned off during the second firing. My object only shows blue, which lets me know that the plate was only fired twice.

Statement of Significance

Delftware is significant both historically, and culturally. Delftware was a mass productions operation from around 1600 and 1800 in Northern Europe (England & Dutch), but distributed throughout Europe. This and hard/soft porcelain are evidence of the global influence and interactions Europe had with China and other East Asia cultures. The Chinoiserie design and blue and white color scheme on this delftware embodies this. The object is a link to the past that furthers links to a past global network.

This object also has educational significance. As someone who is interested in learning different specialties in Art conservation, this provides me the opportunity to experience the ceramic conservation process from beginning to end; from photodocumentation to reconstructing the artifact.

Condition

The overall state of this object is poor and needs treatment to prevent further damage or loss. The object is in approximately 86 sherds, which compromises the aesthetic appearance. (Fig 1) In Figure 7, a failed previous repair can be seen by the discolored residue, along with various areas of loss. The well of the plate (bottom-center) is distinctly broken in three sherds. The top rim of the plate has the most breakage.

Figure 7. Underside and Overside with color identification marks for specific condition elements.

Possible Fills and Inpainting

- Three rim edge sherds and the foot sherd may be fills with inpainting, due to a difference in texture and the missing reflective quality under short wave ultraviolet lights. (Fig 8)

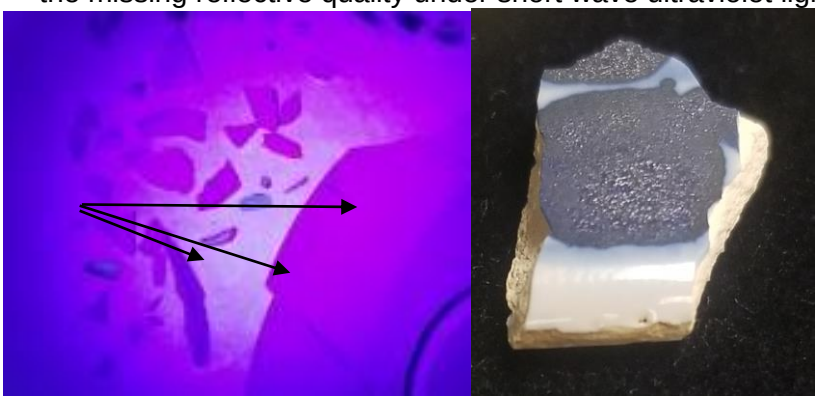

Figure 8. Possible Fills

Underside

Losses

Earthenware Losses-

- Section of the left edge on the foot is broke off leave an uneven foundation for the plate.
- Minor losses on the rim of the plate on the exact opposite of the side with the most fragments.
- There appears to be a loss where the cheek of the plate become the rim left of the damaged foot.

Glaze losses-

- Most of these loses are found on the rim edges of the plate and around the sherd's edges of the top part of the plate.

Prior Repair & Staining

- The discolored adhesive residue runs the length from center of the foot to the rim of the plate from.
- In normal light there is a brownish stain, and under ultraviolent light it became clear that the stain was caused by the adhesive from the previous repair. (Fig 9)

Figure 9. Normal light and UV light showing correlation between staining and adhesive.

Manufacturing

- The pegs marks left during the firing process does not have a glaze coating, flaking and loss of glaze on edge can be seen. (Fig 10)
- There is a darkening in the glaze where it appears the glaze may have pooled. Although, earthenware tends to be porous when not glaze, so the discoloration could also be the result of staining from liquid or food oils that seeped through areas where the earthenware was exposed. (Fig 10)

Figure 10. Darkening in Glaze near Manufacturing Marks

Overside
Losses

Earthenware Losses-
- Minor losses on the rim of the plate on the exact opposite of the side with the most fragments.
- There appears to be a loss where the cheek of the plate become the rim left of the damaged foot.

Glaze losses-
- The of these loses are found on the rim edges of the plate corresponding to the underside losses.
- Near the earthenware loss where the cheek meets the rim, there are sherds who edges have lost the glaze; these edges have the potential of catching on cloth or something and lead to further glaze losses.

Treatment Report

1. Using photography and writing to document before and during treatments.
2. The old adhesive was mechanically removed from the sherds used a scalpel and an OptiVisor. (Fig 11)

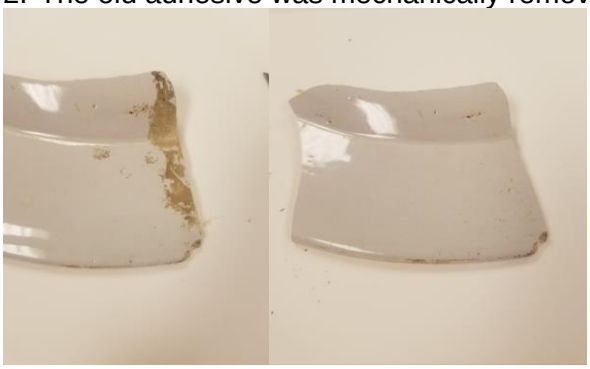

Figure 11. Old adhesive removal from sherd.

3. The “stain” that fluoresced was old adhesive residue that was successfully removed using a scalpel.
4. Every sherd was cleaned using an aqueous solvent (1:1 denatured alcohol: deionized water) and cotton swabs.
5. Once cleaned, each piece’s broken edges were consolidated by applying 15% Paraloid-B-72 in acetone solution with a brush to prevent further breakage or material lost.
6. During this step, I discovered that about 5 sherds had either an inconsistent thickness or coloration to this delftware plate, which I concluded to mean that those sherds did not belong to this item. Placed those unrelated sherds in a small polyethylene bag.
7. After some trial and error, using two clamps and a stockinette wrap-type bandage to keep the bigger pieces still as the 40% Paraloid B-72 in acetone set, which helped to achieve a solid foundation for the plate’s consolidation. (Fig 12)

Figure 12. Adhering two of the largest pieces together.

8. When as many sherds I could adhere together finished setting, Flügger[1] and 30% B-72 w/v in acetone bulked with 3M glass bubbles were used to create fills. For gaps that went through the plate, 30% B-72 w/v in acetone bulked with 3M glass bubbles were used. If the crack was only on the recto side of the plate Flügger was used. (Fig 13)

Figure 13. Red indicates the locations of the fills on the verso and recto sides of plate.

9. The fills were leveled and sanded down with a scalpel.
10. Inpainting was started using a mixture of Golden Fluid Acrylics[2] in Primal WS-24[3] and then applied in glaze-like layers.
11. Inpainting is incomplete, because of time and lab accessibility limitations.

Estimated: 74 hours (73.61 hours)

[1] Acrylic spackle composed of calcium carbonate in a butyl methacrylate binder. Manufactured by Flügger A/S, Denmark. Available from art conservation suppliers.
[2] Lightfast, low-viscosity acrylic paints with a high pigment load. Manufactured by Golden Artist Colors; available at art stores and from Golden Artist Colors.
[3] Also known as Acrysol WS-24 or Rhoplex WS-24, a polyacrylic acid emulsion mixed with acrylic co-polymers; pH 7; dries to a relatively hard, clear, shiny film and is often used to increase gloss in inpainting. Manufactured by Rohm and Haas; available from art conservation suppliers.

Figure 16. Before and during treatment recto and verso view.

Treatment Justifications

The plate needs to have the fills to stabilize the plate's rim. Making the plate stable is the first priority in this treatment, because loose or suspended sherds have a higher risk of damage. In order to reconstruct, the old adhesive residue must be removed. As a result of the solubility test's, the adhesive residue was mechanically removed, due to its insolubility in deionized water, acetone, and ethanol. For small losses, Flügger[11] is the easier method when it comes to preparing, applying, and inpainting. Despite, B-72's tendency to saturate and stain earthenware, B-72 is a good adhesive in reconstructing earthenware, because it has tact and is reversible with acetone. The 30% B-72 w/v in acetone bulked with 3M glass bubbles used further stabilize the plate. Since part of delftware's charm and importance is the aesthetic aspects this treatment is not done. To restore the aesthetic aspects inpainting still needs to be completed.

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Figures

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