Hidden Under the Skin: Examination of an Ecuadorian Polychrome Madonna of the Immaculate Conception

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Introduction

This research was born out of the examination and search for understanding of the material and cultural context of ACP 1556, a possibly 19th century polychrome sculpture of the Immaculate Conception brought from Quito, Ecuador to the United States in the mid-1940s and to the WUDPAC clinic in 2013. Through the study of cross-sections and other types of samples obtained from the sculpture, the pigments, binders, and surface coatings were identified. The findings help date the underlayers to earlier centuries and determine the conservation treatment. This study will contribute to the limited but growing literature on analytical examination of Spanish Colonial Art.

The Sculpture

Description

The polychromed wooden sculpture of the Virgin Mary measures 37.125” x 17.5” x 3.25.” The sculpture was part of the interior ornamentation in a church in Quito, Ecuador. The crecent moon that supported an angel (the sculptor’s mark) is still present on the lower left side, however the rest of the figure has been removed. The head and hands were also removed. The altar stood at the front of the church facing the main altar where the statue of the Virgin Mary was originally located. The Virgin Mary measures 65” high, with the base 20” by 6”.

Art Historical Context

Spanish Colonial Art in Quito can be traced to the Franciscan Order’s establishment of the Colegio de San Andrés in 1555. This school produced the first native artists of Quito. They learned iconography by copying European models. Sculptures from Quito were influenced by the schools of Castille, Seville, and Granada. Quito is located near a wealth of natural resources providing easy access to wood, stone, and precious metals. Spanish polychromed sculptures of the 16th century were usually dressed in robes actually made of linen or saskolcho. 17th century fashion featured brocades and velvets embellished with gold. To recreate this, artists used a technique called estofado which involved gilding, overpainting, and then scribbling decorations to reveal the gold underneath (sgraffito). Tastes and materials changed in the eighteenth century; sculptures then began to feature fabric covered with plaster for the drapery, lead mask faces, glass eyes, and real hair. Artists began incorporating wings, halos, and chains made of silver or copper alloys into their sculptures. The use of sgraffito became a fashionable trend by the eighteenth century and was poured out. The estofado is a chinesco for which silver leaf was used. Overall transparent glazes were sometimes combined with gilded designs in relief.

X-Ray Fluorescence

The X-RF analysis on the area of loss suggests the ground layer is composed of gypsum (CaSO4). Analysis of the presentation surface revealed mercury and lead in the flesh tones as well as in the lips and red underside of the blue mantle, indicative of vermilion, red lead, and lead white. The presence of silver leaf in the darker red layer on the underside of the blue mantle suggests the use of a red lake. The whites appear to be lead white and zinc white.

Cross-sections microscopy

Cross-section microscopy identified in red revealed the presence of four generations of paint. A layer of gilding with paint applied over it in the first generation implies the use of the estofado technique. A layer of metal leaf was identified in the second generation. UV fluorescence and fluorescence images indicate the use of a carbohydrate and protein binder in the first three generations of paint and an oil binder for the fourth generation.

Analysis

X-Radiography

X-radiography provided information on the construction of the sculpture which was made from three vertical planks of wood adhered together. No metallic joinery was revealed; planks are likely held together with an adhesive and wooden dowels (not yet detected). X-radiography also revealed the extent of the degradation of the wooden support from past insect infestations, losses in the ground and paint layers, and the possible use of a radio opaque filler (such as lead white) from past restorations.

SEM-EDS

SEM-EDS analysis of sample 1 (CS1) revealed a layer of gilding in the first generation. The metal was identified as gold, with an iron-rich layer underneath the gilding, most likely a bole. A layer of metal leaf was detected in the second generation of sample 2 (CS2). EDS results identified the metal as silver.

Raman Spectroscopy

Raman spectroscopy was performed on CS2. Sample location identified in white. The layer of blue over the gilding in CS2 was a match for an indigo reference spectrum.

Fourier Transform Infrared Spectroscopy

FTIR analysis of the adhesive used in a previous restoration showed characteristic absorbance peaks for cellulose nitrate. Cellulose nitrate was used in the early 20th century as an adhesive—Duco Cement.] Sample location Identify in blue.

Interpreting the Results

The visual and technical analysis of this sculpture places it in close relationship with the Sevillan style and with what was being produced in Quito in the seventeenth and early eighteenth centuries. Examples of seventeenth-century polychromed sculptures from Quito employed azurite and indigo for ornamentation in a church in Quito, Ecuador. The crescent moon that supported an angel (the sculptor’s mark) is still present on the lower left side, however the rest of the figure has been removed. The altar stood at the front of the church facing the main altar where the statue of the Virgin Mary was originally located. The Virgin Mary measures 65” high, with the base 20” by 6”.

Treatment in Progress

Condition

The sculpture had an overall layer of grime. There were remnants of a partially removed, discolored varnish and areas of uneven overpaint. The paint and ground layers were actively flaking, and the insect damage created weak spots in the wooden support.

Treatment to Date

1. The surface was cleaned using PD10H sponges and D4 (cyclometheione, to prevent penetration of aqueous solutions which could impact on water-soluble underlayers) followed by a 2% citrate solution buffered to a pH of 8.5 with TDA.

2. The paint layers on the face and hands were humidified with the use of Gore-Tex. Consolidation and flattening with 10% Aquad 200 in 1:3 isopropanol and water was followed by heating with a tacking iron.

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