

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

by Bianca M. García

## Introduction

This research was born out of the examination and search for understanding of the material and cultural context of ACP 1556, a possibly 19<sup>th</sup>-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 helped 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 polychrome 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 crescent moon and praying gesture with the face tilted downwards identify the sculpture as an Immaculate Conception. The sculpture may have been part of a *retablo* (altarpiece) or a wall decoration within another portion of the church.



## Art Historical Context

Spanish Colonial Art in Quito can be traced to the Franciscan Orders 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. Sculptors 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 polychrome sculptures of the 16<sup>th</sup> century were usually dressed in robes actually made of linen or sackcloth. Seventeenth-century fashion featured brocades and velvets embellished with gold. To recreate this, artists used a technique called *estofado* which involved gilding, overpainting, and then



Detail of *estofado* on 17<sup>th</sup>-century Spanish polychrome sculpture. Image by: National Gallery of Art

scribing decorations to reveal the gold underneath (*sgraffito*). Tastes and materials changed in the 18<sup>th</sup> 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 old fashioned by the 18<sup>th</sup> century and was set aside for the *estofado a la chinesca* for which silver leaf was used. Overall transparent glazes were sometimes combined with gilded designs in relief.

## Analysis

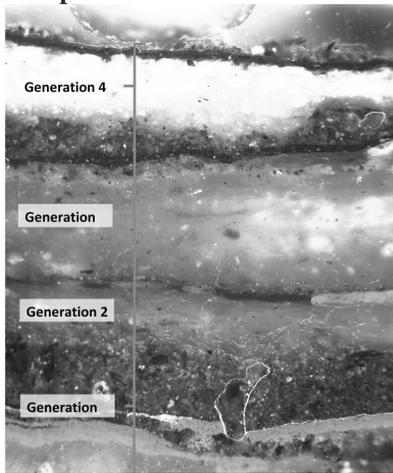
### X-radiography

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/or 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.

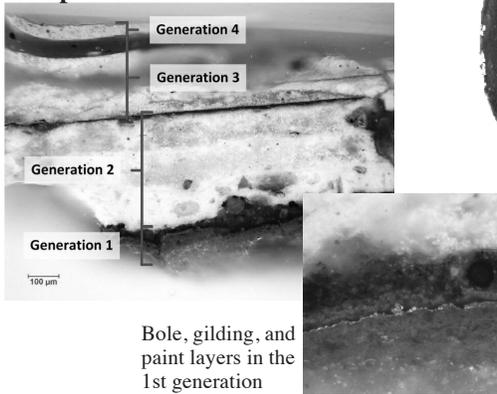


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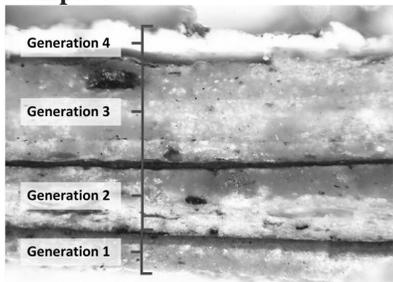
## Sample 1



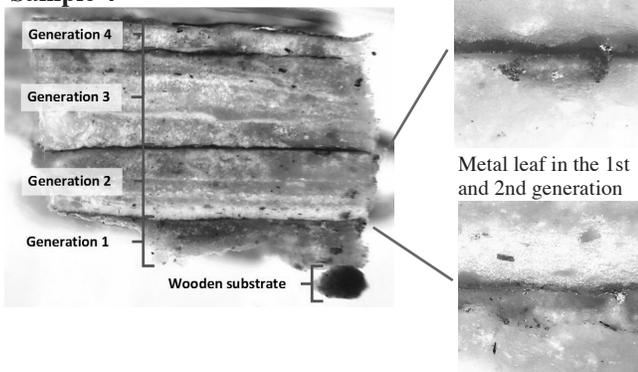
## Sample 2



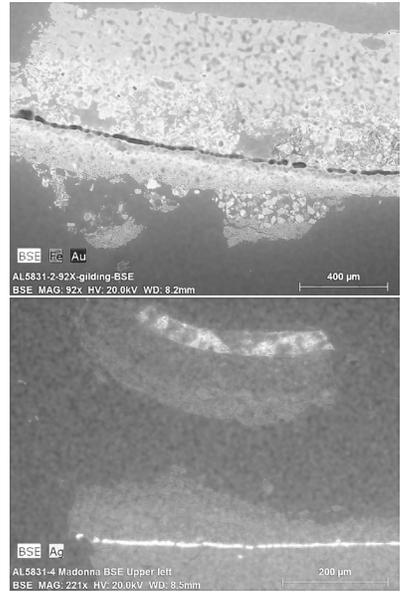
## Sample 3



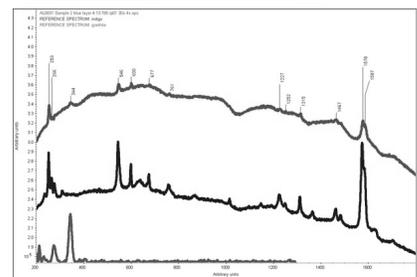
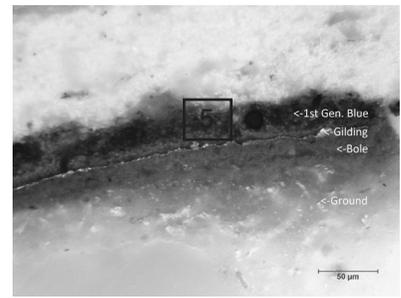
## Sample 4



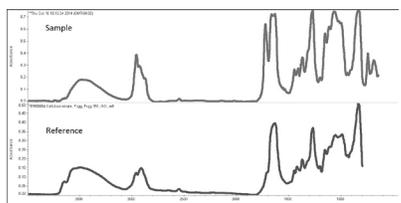
## SEM-EDS



## Raman



## FTIR



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### XRF

XRF analysis in an area of loss suggests the ground layer is composed of gypsum (CaSO<sub>4</sub>). 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 vermillion, red lead, and lead white. The presence of Ba 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-section Microscopy

Cross-section microscopy performed on the sites 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 fluorochrome staining indicate the use of a carbohydrate and protein binder in the first three generations of paint and an oil binder for the fourth generation.

### 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

Raman spectroscopy was performed on CS2. Sample location 5. The layer of blue over the gilding in CS2 was a match for an indigo reference spectrum.

### FTIR

FTIR analysis of the adhesive used in a previous restoration showed characteristic absorbance peaks for cellulose nitrate. (Cellulose nitrate was used in the early 20<sup>th</sup> century as an adhesive –Duco Cement.) Sample location 6.

### Interpreting the Results

The visual and technical analysis of this sculpture places it in close relationship with the Sevillian style and with what was being produced in Quito in the 17<sup>th</sup> and early 18<sup>th</sup> centuries.

Examples of 17<sup>th</sup>-century polychrome sculptures from Quito employed azurite and indigo for the blue. The color palette was extended in the 18<sup>th</sup> century to include the use of Prussian blue.

The materials identified in the first generation on ACP 1556 seem to fit better with the 17<sup>th</sup> century. However, the materials found in the second generation of paint do correlate to 18<sup>th</sup>-century materials, specifically the silver leaf.

The presence of gold and indigo in the lowest paint layer supports the case for an earlier date of the original creation, placing the first presentation surface of the sculpture closer to the 17<sup>th</sup> century.

The image on the right is a digital reconstruction of what the sculpture may have originally looked like in the 17<sup>th</sup> century. The pink and white areas of the drapery and the moon would have also been gilded.

### Treatment to Date 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 had created weak spots in the wooden support.



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### Treatment

1. Application of 10% Aquazol 200 in 1:1 isopropanol and water was followed by heating with a tacking iron.
2. The surface was cleaned using PVOH sponges and D4 (cyclomethicone, 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 TEA.
3. The paint layers on the face and hands were humidified with the use of Gore-Tex. Consolidation and flattening with 10% Aquazol 200 in 1:1 isopropanol and water was followed by heating with a tacking iron.



### Acknowledgements

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Jim Schneck, Winterthur Museum  
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## Articles You May Have Missed

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**“The Art of Chocolate (and Soap),”** *Smithsonian.com*, 02/10/2015

Two portrait busts standing next to each other on the third floor of the Hirshhorn gallery are sculpted from two of the more uncommon materials in the Hirshhorn collection: chocolate and soap.

Contemporary artist Janine Antoni created the original sculptures in 1993 from molds of her own head. Then she licked the chocolate bust down until its features became indistinct, and took the soap bust into the shower with her, letting water slowly erode its features. Hence the artwork’s name: Lick and Lather.

Lick and Lather also represents the success of a long and scientific partnership between Antoni and the Hirshhorn’s conservators. The Hirshhorn acquired its version of the work in 2001. But sometime between 2004 and 2008, the Hirshhorn’s soap bust began to decay.

Both the busts had aged, with the chocolate bust taking on the whitish tinge that a chocolate bar does when it’s been around for a while. To an extent, this normal aging is part of the artwork’s intention, says Antoni. But the soap bust had developed problematic-looking white crystals on its surface.

Hirshhorn conservator Gwynne Ryan suggested calling Antoni to get her input on the process. Although partnerships between artists and conservators are becoming more common in the contemporary art world, they still aren’t the norm, she says.

Over the next two years, starting in early 2011, Ryan says, Antoni opened her studio to the conservators. They read Antoni’s notes, tested other Lick and Lather soap busts, and interviewed her soapmaker. They discovered that Antoni’s soapmaker had used different soap formulations for different busts. The Hirshhorn’s bust had become unstable because there was excess lye in it.

So the team decided to formulate 16 different varieties of soap in the conservation lab, which they then cut into samples that they tested in different environmental conditions. Eventually, the team discovered which formulation would be the most stable. Antoni gave them a different soap bust to replace the older one.

Ryan says further experiments may focus on how heat and mold thickness affect the soap’s durability. This information, says Ryan, could be beneficial not just to Antoni and the Hirshhorn, but to the museum conservation community as a whole.

**“Hidden Art: Depression-Era Mural to Return to Life in Cedar Rapids City Hall; Part of the Mural has been Hidden from View for 50 Years, Including Controversial Sections,”** *The Gazette*, 02/27/2015

Come the end of April, residents will see the main reason workers on two occasions — the last time some 50 years ago — painted over a Great Depression-era mural that adorned the large courtroom in the former federal courthouse.

In 2011, the courthouse at 101 First St. SE became City Hall, and its large courtroom became the City Council chambers. On April 13, a city-hired restoration firm will begin work to unveil the third wall of the four-wall mural for all to see. This part of the public art project will restore the “most controversial” piece of the overall mural, which wraps around the top of the room.

It is controversial because the restoration will reveal an image of a vigilante hanging, which at the time was positioned on the east wall directly across from the jury box. Judges in 1954 painted over the mural, in part, because defense lawyers objected to the image of the hanging even though it was paired with a show of progress — an image of modern-day law and order.

Restored in 1961, it was covered over again a few years later after art experts said it had neither artistic nor much historic value. The third restoration project was given the go-ahead this week