

Curator's Choice

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Lighting the Past: How RTI Revealed Royalty

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Conservation plays a key role in the analysis and interpretation of archaeological artifacts by helping to reveal surface details that may be hidden beneath soil or corrosion. Conservators have a range of cleaning methods at their disposal to assist in this process. However, cleaning alone may not always yield the level of detail necessary for accurate identification. To enhance surface visibility, conservators and archaeologists at the Maryland Archaeological Conservation Laboratory use an imaging method called Reflectance Transform Imaging (RTI).

RTI is a computational photographic technique that captures the surface shape and color of an object in fine detail by recording how it reflects light from multiple directions. In an RTI setup, a stationary camera takes a series of photographs of the object while varying the position of a single light source around it. Specialized software then combines these images to create an interactive file where the user can manipulate a virtual light source to explore surface features. This method reveals subtle textures and surface details—such as inscriptions, tool marks, or wear patterns that are often not visible under static lighting.

A notable example of RTI aiding in artifact identification is a sleeve button recovered from Middle Plantation (18AN46) in Anne Arundel County, MD. Initially, the image on the button was thought to depict King George II (r. 1727–1760)*. Despite the careful removal of soil and concretions by conservators, the figure remained difficult to identify with certainty. However, the use of RTI allowed curators to examine the surface in greater detail, ultimately leading to the identification of the figure as Queen Anne (r. 1702–1714) with dates that align more closely with the site's period of occupation.

A wide range of methods and analytical tools are often used together to aid in the identification and interpretation of archaeological artifacts. Among these, Reflectance Transform Imaging stands out for its ability to reveal fine surface details that may not be visible through cleaning or traditional photography alone, making it a valuable tool in archaeology, conservation, and material studies.

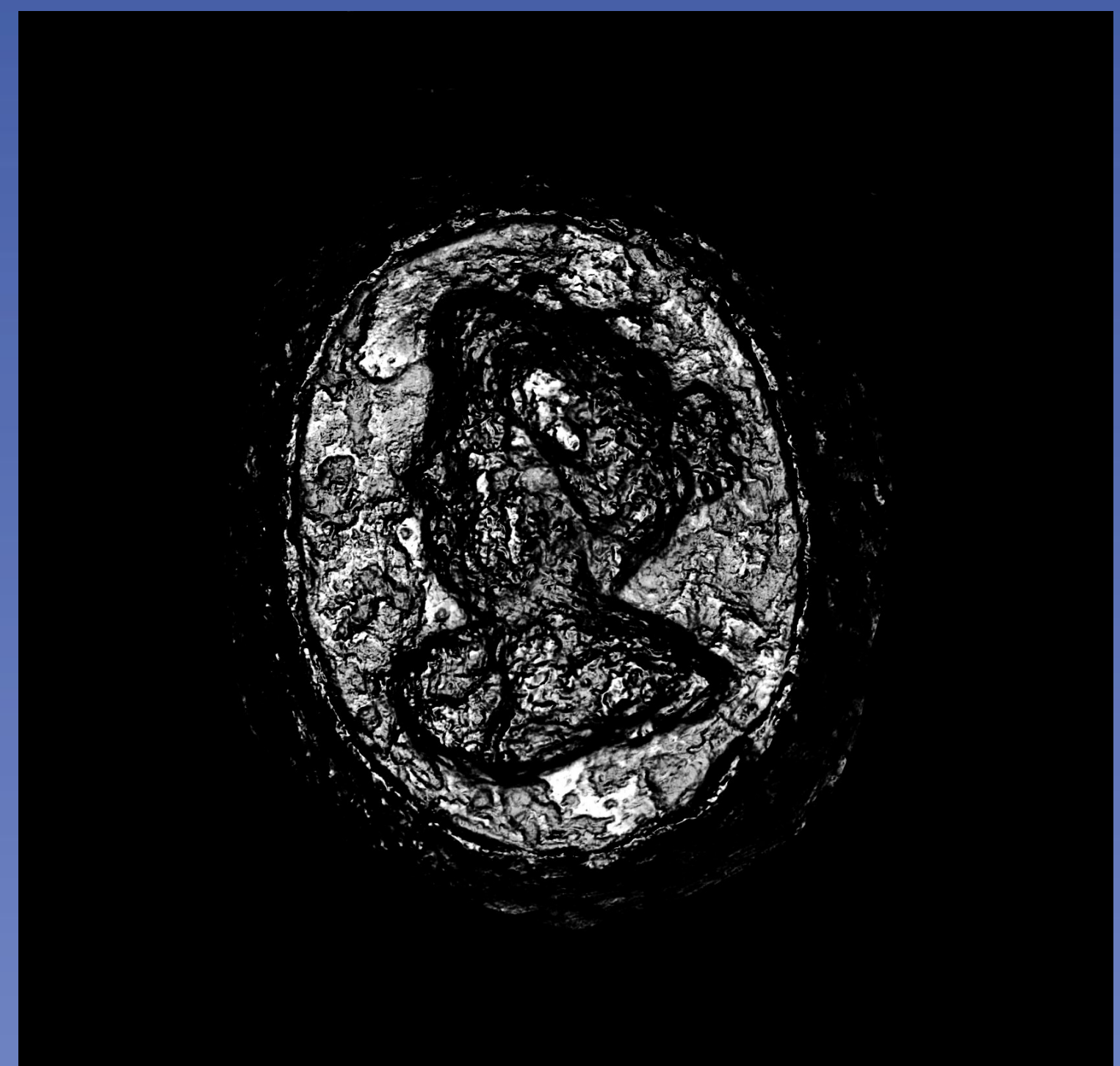


Figure 2: RTI image of sleeve button



Figure 1. Before and after treatment images of sleeve button

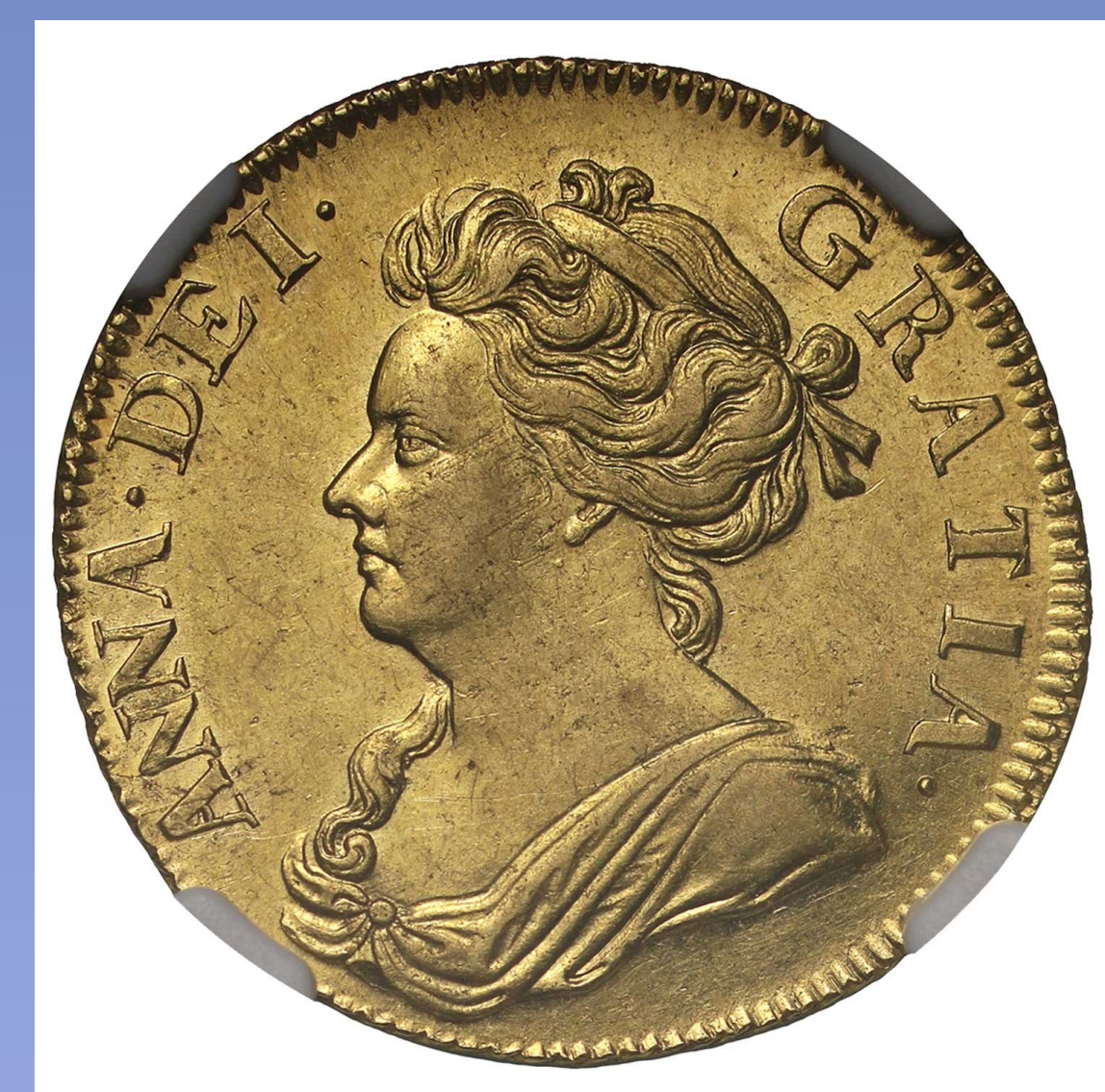


Figure 3: Bust of Queen Anne on a 1702 Gold Guinea. Image courtesy of The Royal Mint. <https://www.royalmint.com/shop/monarch/queen-anne/1702-Anne-Gold-Guinea-Pre-Union-Type/>

References Cited

- * Doepken, William P.
1991. Excavations at Maren Duvall's Middle Plantation of South River Hundred. Gateway Press, Inc. Baltimore. p.177.

