



D66 19th-Century Jewish Cemetery in St. Maarten: Historic Facial Approximation Using Modern Technologies as a Doorway for Forensic Cases

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After attending this presentation, attendees will better understand the capabilities of modern facial reconstruction technology, as demonstrated utilizing a historic case example.

This presentation will impact the forensic science community by illustrating the results of working with multidisciplinary techniques and technology that lead to the ability to create modern 3D printed models. It will also help educate the forensic community about the current and future uses of 3D scanning and full-model 3D printing.

Facial approximations (reconstructions) are often used for medicolegal reasons, but they can also illuminate and give life to historic characters that in turn give rise to placement of historic communities in an appropriate context. Historians concur that the Isla de San Martin was discovered by Christopher Columbus on November 11, 1493 and claimed the island for Spain. For all intents and purposes, primarily Dutch and French settlers populated the Island of St. Maarten in the 1630s as Spain did not develop the island and allocated its resources elsewhere. The extent of the population of Jewish settlers was relatively unknown until the discovery of a Jewish cemetery. Historic research, anthropological methods, and, ultimately, a facial reconstruction give a face to one of the undocumented Jewish men buried at the forgotten cemetery location, and thus sheds new light on the contributions of this community to the island's economic and cultural development.

In 2010, a Jewish cemetery was discovered when research for other historical purposes was being performed. The discovery of a Jewish cemetery that was sold by the government and covered with residential houses was made. The Saint Maarten Archaeological Center (SIMARC) found remains of a decedent intact. A sample of dentition was sent to the College of William and Mary where a mitochondrial DNA analysis was performed. The remains were determined to be from the haplotype group U of Sephardic Jewish ancestry.

After an anthropological study that produced a biological profile, a facial reconstruction was made by creating a replica of the skull with photographs and measurements from the actual skull. A replica of the skull was created using silicone mold-making methods. With the replica of the skull a facial reconstruction was made with clay. State-of-the-art 3D scanning services were then donated by Engineering and Manufacturing Services (EMS), Inc. to 3D scan the reconstruction and then create a 3D resin print out of the reconstruction for museum use. A durable reconstruction was made to be placed for display at the Philipsburg Jubilee Library in Philipsburg, St. Maarten.

Ground Penetrating Radar (GPR) Systems were also used to map out the potential sites of the cemetery on nearby grounds to assist in the culmination of the documentation of the Jewish history in St. Maarten.

The ability to streamline the data using familiar methods in conjunction with modern technology has given the historical skeleton a proper placement in the community's history. These techniques demonstrate the positive results that international collaborative efforts could produce in forensic cases in the future. Issues such as preservation of chain of custody, release of materials, and other procedural concerns can be mitigated, as the original material may not ever need to leave its current locale.

Facial Approximation, 3D Laser Scanning, Historic Archaeology