A digital archaeologist helps inaccessible collections be seen

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Davide Tanasi scans an artifact from the Farid Karam collection. Credit: Davide Tanasi, Author provided

Davide Tanasi is a digital archaeologist at the University of South Florida. He creates highly detailed 3-D scans of archaeological artifacts that can be viewed online or used to create 3-D printed replicas.

Why is it important to digitize these artifacts as 3-D objects?

It helps spread knowledge about them and guarantees that they will be passed to future generations. For example, the USF Libraries Farid Karam M.D. Lebanon Antiquities Collection is one of the largest collection of Lebanese archaeological artifacts in the U.S. Some of the objects are 3,500 years old. Due to space and personnel restrictions, it was never exhibited and made fully available to the general public. Being unpublished, hardly accessible and poorly visible online, it basically does not exist. Our project to recreate the collection in 3-D is called the Virtual Karam Project. It allows us to share those objects around the world, hopefully triggering interest to curate and display the collection.

How do you scan them?

The 3-D models of archaeological artifacts must be geometrically accurate to satisfy interested scholars but also realistic enough to engage the public. The "body" of the artifacts is captured with an ultra-precision 3-D scanner integrated into a measuring robotic arm. The multicolored "skin" is acquired via a set of high quality digital photographs. From the combination of the two features comes the actual 3-D model.

How common is it for museums to create 3-D images of their collections?

The fire which recently destroyed the National Museum of Brazil was a global wake up call for curators to start plans for the 3-D digitization of

historical and archaeological collections. Plans not just for simple archiving and dissemination purposes but also to create a sister digital collection, which can be 3-D printed and function as a "surrogate" in case the originals are destroyed. With the British Museum and the Smithsonian Institution leading the charge, it is becoming more common even for small museums to start virtualization projects for their collections.

What other kinds of collections are you digitizing in this way?

I'm working on the Joseph Veach Noble Collection at the Tampa Museum of Art, a group of 150 artifacts, mostly high quality Greek black and red-figure pottery from Athens, Attica and South Italy. Another one of my projects involves the Luigi Palma di Cesnola Collection of Cypriot Antiquities, which includes exquisite examples of ancient pottery and statues ranging between 2,500 B.C. to 400 A.D. Both collections are largely unpublished, only partly accessible to the local public, with poor digital representation.

How do you hope people will use these digital collections?

They are an advanced archival record for the museum. But the 3-D models can also be built in Virtual Reality and Augmented Reality experiences for the public. Digital replicas can also be used by scholars in every part of the world or to popularize archaeology or trigger interest towards a certain museum or site. Digital collections can also be integrated in the teaching curriculum at K-12 and university level for history, art history and anthropology.

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