# Maine Archives and Museums Quarterly

## SHUTTERED GALLERY TO VIRTUAL MUSEUM

BY JON IPPOLITO

The 2020 quarantine has musicians Zooming and dancers YouTubing, but what if your cultural capital amounts to a roomful of unique physical objects? Must museums and archives be relegated to humdrum web pages while the performing arts have all the fun?

The pandemic has renewed interest in inventive ways of representing real space on a smartphone screen, desktop computer, or virtual reality headset. The simplest archetype for a virtual museum dates back to 1994, the year after the web was born, when French student Nicholas Pioch created the WebLouvre website from scanned images in books about the iconic museum.[1] Pioch was forced to change the name after the brick-and-mortar--er, glass and steel--Louvre threatened to sue. Yet it took years for the actual Louvre's website to catch up to Pioch's, and in the interim the default paradigm for a virtual museum became a website where each page depicted a particular artist or work.

Spice up the texts and images with maps and other media and you have the sort of "virtual tour" seen in the pages MAM members have created in partnership with Vamonde.[2] Cuseum's Brendan Ciecko even recommends, "curated Spotify playlists to accompany virtual galleries, recommended wine and cheese pairings for each tour, and invitations to share the experience on social media."[3]

Museums with more adventurous IT staff--and budgets--have created more interactive virtual tours that let viewers "walk" through an indoor or outdoor environment, steering a camera through the Metropolitan Museum the way Google Street View lets users preview the intersection of Fifth Avenue and 82nd Street before actually driving through it. Google's own Arts and Culture project[4] has created 2,500 free online tours of cultural organizations across the world, letting you zoom like a microscope into a Frida Kahlo painting or race your way down the Guggenheim's spiral ramp.

Prefer to see the artwork hanging on *your* wall instead of the Guggenheim's? There's an app for that. Google offers one (Art Projector) as does Cuseum (Museum From Home).[5] Point one of these augmented reality apps at your wall, choose a painting, and you'll see Monet's water lilies hanging next to your Ikea bookshelf, right there in your phone's camera.

What if your collection consists of objects in the round, like silver candelabras or vintage Mickey Mouse figurines? Digitizing doesn't just apply to flat images. Vienna's Kunsthistorisches Museum is one institution that has created 3D models of its artifacts using specialized cameras from outfits like Matterport.[6] Barack Obama was the first US president to have his portrait taken in 3D--a digital update on Abraham Lincoln's 1865 life mask created with plaster. Both are now in the Smithsonian.[7]

One of the more inventive uses of digital surrogates for real culture comes from my fellow Digital Curation professor John Bell, who is working with Dartmouth's Karolina Kawiaka on a project that could let viewers step inside one of the world's most famous paintings. A pinnacle of Baroque painting, Diego Velazquez' 1656 *Las Meninas* has stumped generations of art historians who've tried to interpret its deceptively straightforward-looking perspective. Depending on your interpretation of who is standing where, the subject of the painting may be the Spanish king and queen seen in a distant mirror, or the court maids for which the painting is named, or the artist himself. Now Bell and Kawiaka are re-creating the room depicted in *Las Meninas* in virtual reality, populating this digital architecture with each of the figures to match the positions and angles implied by the canvas.

You don't need a high-tech lab like Bell's Data Experiences and Visualizations studio to create a virtual version of your own collection. In fact, you can do it with your smartphone, an internet connection, and the baubles on your kitchen counter. Photogrammetry apps stitch together a 3D model with realistic colors and textures from photos you take with your smartphone. This is in fact an assignment for the introductory course in the University of Maine's Digital Curation graduate program, DIG 500. You can find some of our students' scans by searching for the keyword "DIG 500" at Sketchfab, a site for sharing interactive 3D models.[8] Spin them, zoom in, explore their realistic textures from the outside or (gulp) even from the inside.

Want to make your own? Here's how:

First, create your own Sketchfab account. You'll use these credentials later. Next, choose a three-dimensional physical object to digitize. This can be something from a personal or institutional collection, and doesn't have to be of intrinsic value. You can experiment with several options, but the best objects tend to be:

 • Asymmetric rather than symmetric (a pitcher is better than a vase).
 • Solid rather than stringy (a hat is better than a ball of yarn).
 • Closed rather than open or perforated (castanets are better than a bugle).
 • Matte rather than reflective (a wooden spoon is better than a silver one).
 • Opaque rather than transparent (a beer stein is better than a martini glass).

The best backgrounds are:

 • Flat rather than uneven (a table is better than grass).
 • Variegated rather than solid in color (wood grain is better



Diego Velazquez' *Las Meninas*

than paint).
 • Easy to walk around (a coffee table is better than a shelf).
 • Evenly lit (a cloudy day is better than a sunny one).
 • Wide enough to prevent distant vistas from appearing in the frame.

If you can't accommodate these constraints, try sticking pieces of colored tape to the object or background as landmarks.

Then install one of the many applications that let you scan 3D objects with your phone or camera.[9] Each offers a different method to create a 3D model from images of an object--via iPhone, Android phone, or via a Windows desktop application. Since background registration can be tricky, the Qlone app[10] offers a handy mat you can print out to use as a base for your object.

Most of these apps have video tutorials that show you how to create your 3D model. Once you're done shooting and processing your object, publish it to your Sketchfab account. You can do this in a number of these apps by linking to your Sketchfab account and then choosing the Export to Sketchfab option when you're done processing your scan.

(Pros who want to tweak their 3D model can download it in one of several formats, then use free software like Meshlab[11] to smooth out the surface or delete parts of the background scanned by accident.)

Be forewarned that this is cutting-edge technology and doesn't always work as expected, so give it a few tries with different objects and different lighting. If you're happy with the results and want to share virtual objects on your own web domain, Sketchfab

offers a business license that lets you embed its interactive models in your website.

As fun as it can be to share your child's first Play-Doh animal with your family online, photogrammetry can also serve a political purpose. Palestinian Syrian dissident Bassel Khartabil knew the Roman ruins at Palmyra could be targets of the ISIS insurgents overrunning Syria, so he took extensive photographs from various angles using his ordinary digital camera. He was later imprisoned and executed by the Assad regime, and ISIS did in fact blow up the Temple of Bel and other historic monuments.

Yet Khartabil's tragic death left a surprising gift behind. Khartabil had been working on a project to construct 3D architectural models from his photos. Fellow activists took up this mission after Khartabil's death, encouraging a broader community to share photos with the hashtag #NEWPALMYRA and use photogrammetry to stitch them into a virtual reconstruction of the vandalized temples. Now other archeologists are using the technique to rebuild entire cities from the ancient world.[12]

Whether you are digitizing endangered monuments or American Girl dolls, there's never been a better time to put your collection online.

*Jon Ippolito directs the University of Maine's all-online Digital Curation graduate program.*

### References

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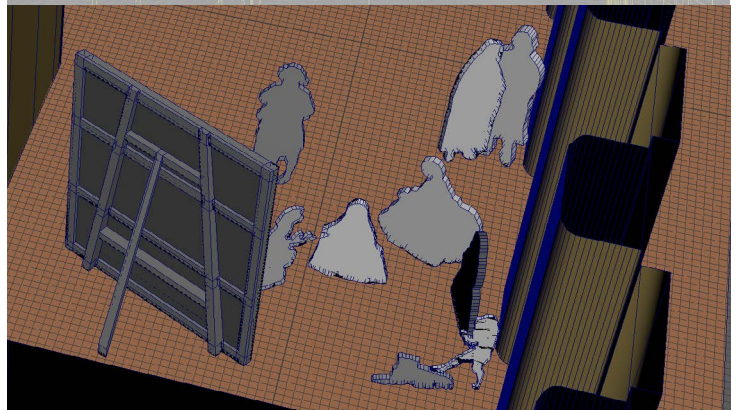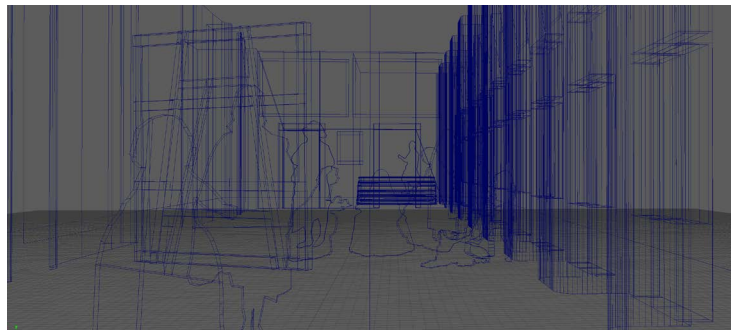
Diego Velazquez' *Las Meninas*, re-created in virtual reality by Karolina Kawiaka with Alaina Arnold and Kala Goyal. Screenshots by John Bell.

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