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Transforming the Art Museum in the 21st Century

Ms. Jane Alexander

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Profile

Jane Alexander is the chief digital information officer for the Cleveland Museum of Art. As CDIO, Jane is responsible for creating awe-inspiring and iterative digital projects that support a vision of innovation, technology implementation, and digital transformation exemplifying the CMA's mission. Under Jane's leadership, the CMA has launched a comprehensive Open Access initiative, iterated upon the world-renowned *ARTLENS Gallery*, (originally *Gallery One*), and created award-winning online toolsets in response to the COVID-19 pandemic. Jane leads the development of groundbreaking in-gallery digital experiences, including *Revealing Krishna: Journey to Cambodia's Sacred Mountain*, an unprecedented scholarly exhibition intersection of art and immersive mix reality experiences.

Presentation

The Cleveland Museum of Art has long been a digital innovator, known for over a decade of digital innovation, including *ARTLENS Gallery* with gesture-based interactives created for the digital native, our comprehensive Open Access Initiative – and during the pandemic, relevant and inspiring web-based AI toolsets.

Recently, the CMA has taken on the new challenge of creating a first of its kind scholarly exhibition *Revealing Krishna: Journey to Cambodia's Sacred Mountain* which combined immersive mixed reality, large scale projection and gesture-based interactives to tell a



Compilation of images showing the CMA's digital offerings

complex story of global diplomacy and the conservation of a Cambodian masterwork.

Revealing Krishna is centered on CMA's beloved sculpture: *Krishna Lifting Mount Govardhan*, a carved sandstone sculpture from around 600 AD. The sculpture was originally installed in a cave temple on Phnom Da, a sacred, two-peaked mountain, and was one of 8 monumental stone sculptures of the Hindu Gods installed on the mountain. Centuries of upheaval led to the statue repeatedly changing hands and relocating around the globe. In the 1970's the CMA acquired the sculpture, and it



Visitors in the *Revealing Krishna* exhibition

was reconstructed in CMA's conservation Labs using newly discovered fragments. At the same time, another sculpture was discovered in Cambodia, and in 2005 the remaining fragments were sent from Cleveland to Cambodia to reconstruct the other Krishna sculpture. CMA's reconstructed Krishna was on view like this for about 40 years. However, there were lingering doubts about the arrangement of these fragments. In the last decade, colleagues in France, Cambodia and Cleveland collaborated on investigating the sculptures using a full-size 3D replica of the sculpture to solve this puzzle. This revealed that the current configuration was incorrect. Conservation began working to reconstruct the sculpture as it would have stood centuries ago, by undoing the conservation done in the 70s.

Four stages of *Krishna Lifting Mount Govardhan*



1. At 1973 acquisition
2. After 1978 restoration
3. After 2020 restoration
4. Digital rendering; artist's re-creation of the sculpture completely restored and reinstated in the original cave temple on Phnom Da

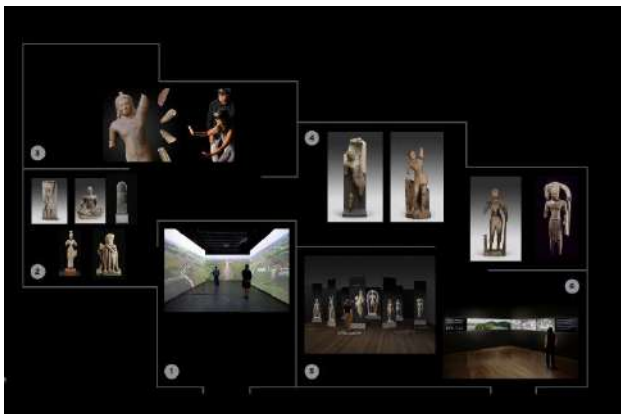
Compilation of images showing the transformation of Krishna Lifting Mount Govardhan, as well as a digital rendering of how the sculpture originally would have appeared.



CMA director William Griswold shakes hands with Kong Vireak, director of the National Museum of Cambodia, after signing an accord on cooperation between the museums.

This involved a trade in fragments between the Krishna in the CMA’s collection, and the counterpart in the National Museum of Cambodia, initiated when Sonya Rhie Mace, curator of Indian and Southeast Asian art, first came to the CMA. She researched the provenance of works in her area, including the Hanuman sculpture seen here. After being informed that the originally accepted provenance might be inaccurate, the museum took steps to uncover the truth of the sculpture's history. When she understood the research, she recommended that the Cleveland Museum of Art voluntarily return the work to Cambodia, which it did in 2015. As a result of the returned sculpture, the National Museum of Cambodia honored the return as an example of best practice and entered into an agreement with the Cleveland Museum of Art to exchange artworks, expertise, and research.

When we began planning an exhibition centered on *Krishna Lifting Mount Govardhan*, it was clear the sculpture’s complex story would be difficult to tell through artwork alone. We wanted visitors to be immersed in the research, history, and global partnerships behind the exhibition, to witness the significant undertaking that brought the sculpture to the CMA, and to its current state. For a seamless experience between the physical and digital, we developed concepts to take visitors through the canals from Angkor Borei to the sacred mountain, explore Krishna’s original cave temple, and stand before the monumental gods of Phnom Da. Our goal was to make the unbelievable story of the sculpture accessible to all audiences, scholars, and the general public alike.



Infographic discussing what to expect in the immersive exhibition, *Revealing Krishna: Journey to Cambodia's Sacred Mountain*



“Journey to Phnom Da.” The immersive panoramic footage and soundscape captured via boat and drone takes visitors through the canals of southern Cambodia.

In the opening gallery, *Journey to Phnom Da*, we use immersive video projections on three walls and a Cambodian-waterways soundscape to create a cinematic experience of the sculpture’s homeland.

The second of the four immersive galleries is dedicated to a HoloLens 2 tour. Wearing a HoloLens headset, visitors physically follow the life story of our Krishna through five stations, each with abstract physical forms that ground the Augmented Reality landscape. Guided by the voice of the eight-year-old Krishna and following physical and digital wayfinding, visitors in groups of six disembark every three minutes—up to 36 people at a time can be on the tour. The mixed reality offers an immersive experience without completely occluding the field of vision; users can still see and interact with others and

maneuver through the gallery, blending the physical and the virtual.

To gather material for the exhibition, our crew flew drones over Phnom Da, entered the cave temples, and collected lidar scans, photogrammetry, and sound recordings. The tour culminates in a life-size holographic projection of the temple on Phnom Da where the Cleveland Krishna appears to have stood. Visitors will experience a high-resolution model of the temple at scale with ambient sound. They will see an artist's rendering of Krishna as he might have originally looked before years of wear and tear.

This model of Krishna demonstrates the benefit of technology. Our conservators would never alter an object to this degree, but here we can re-create how the sculpture might have looked, with its dark, polished surface and original gold jewelry. We can experience walking up to it, in its original context, centuries ago. Visitors will come away from the HoloLens 2 tour with a new appreciation of the storied conservation history of the Cleveland Krishna and new perspectives before removing the headset and viewing the actual sculptures in the following gallery.

The virtual reconstruction of Krishna is based on a decade of research from a cross-continental team. Atop our virtual Phnom Da, created with photogrammetry captured via drone, the sculpture is situated precisely where curator Sonya Rhie Mace and other scholars believe it stood more than 1,000 years ago. In another gallery visitors will also see detailed 3D models of all eight sculptures depicted using high-resolution lidar and photogrammetry.

Visitors are sent off with an immersive timeline exploring the impact of global history and the diplomacy surrounding the sculptures of Phnom Da,



A visitor examines holographic fragments in the *HoloLens Experience*



Digital rendering of “The Story of the Cleveland Krishna.” The mixed-reality tour culminates with a life-size holographic representation of the original cave temple on Phnom Da, where visitors are invited to walk around an artist’s re-creation of the sculpture as it might have stood.



The “*Gods of Phnom Da*” digital gallery displays life-size 3D models of the eight gods of Phnom Da, from c.600, with motion-activated animations exploring details and iconographic elements.

narrated by director, actor, and humanitarian Angelina Jolie and author Loung Ung (*First They Killed My Father*). It tells the story of the gods of Stone Mountain showing the excavations and earliest discoveries in the 1800s, alongside present-day footage and animated maps. The film also covers the past decade of conservation innovations and partnerships with Cambodia and highlights the museum's evolving role in stewardship within the global landscape. Not all museums have the same resources but collaborating gives us the opportunity to share. This exhibition is something that can live beyond its time on view, as something online, traveling to other institutions and as an example for best practices in museums moving forward.

This exhibition represents the future of how people will experience scholarly exhibitions. It is a best-practice example of sharing resources between organizations, and a demonstration of the power of using the digital to tell complex stories in an inclusive manner.



The “*Gods of Phnom Da: Global Journeys*” immersive audio-video timeline traces the discovery and disposition of the eight gods of Phnom Da as affected by global events and the work of museums.

Photo: The Cleveland Museum of Art