



Applied Laboratory for Interactive Visualization and Embodiment

Pure Land is an exemplary new heritage application developed by the Applied Laboratory for Interactive Visualization and Embodiment (ALiVE). Situated at the Hong Kong Science Park in Shatin, ALiVE is an interdisciplinary research initiative of the School of Creative Media City University of Hong Kong, an incubator and innovations showcase for new forms of creativity at the cutting edge of digital media in society. Leveraging technological advances in cinema, games, and mobile, networked and participatory media, ALiVE researches new modes of immersive interactive experience that are of great importance to culture, entertainment, education and industry. Its pioneering installations are made up of unique display environments, production systems and computer graphics techniques. ALiVE builds on creative innovations that have been made over the last ten years at the UNSW iCinema Research Centre, ZKM Centre for Art and Media and at Museum Victoria. Its challenge led research programs are formulated in response to specific academic, cultural and industrial contexts in Hong Kong and Mainland China. This is supported by partnerships with major digital media centers in Europe, USA, Asia and Australia. Examples of seminal heritage applications recently undertaken by ALiVE include: *Rhizome of the Western Han* (2010), *iJiao* (2011), *Tripitaka Koreana 360* (2012) and *ECloud* for Europeana (2012).

Dunhuang Academy

The cave art in Dunhuang provide the world with rich resources for studying religion, history, geography, politics, economics, art, literature, technology, folk customs, costumes, and astronomy of China and Central Asia. In 1943, the Dunhuang Art Institute, the present-day Dunhuang Academy (DHA), was established by the Chinese government. Since then, the DHA has carried out many large projects with the accumulated effort of several generations; some of them done in collaboration with other local or overseas institutions. As well as the historical and cultural studies, other major works are also in progress. These include conservation to restore and consolidate the cliff surface, the caves, the statues and the murals; and digitization which is to digitize the video and photographs of the caves and the relics inside, and to create multi-media virtual tour presentations for the visitors. The presentations, along with visits to the caves, will allow visitors to see more of the Dunhuang art in greater detail and help conserve the treasures inside the caves. *Pure Land* expands the possibilities of such presentations through the creative use of techniques of virtual reality and embodied experience.



Enquiry : 3442 7659
<http://alive.scm.cityu.edu.hk/projects/alive/pure-land-inside-the-mogao-grottoes-at-dunhuang-2012/>

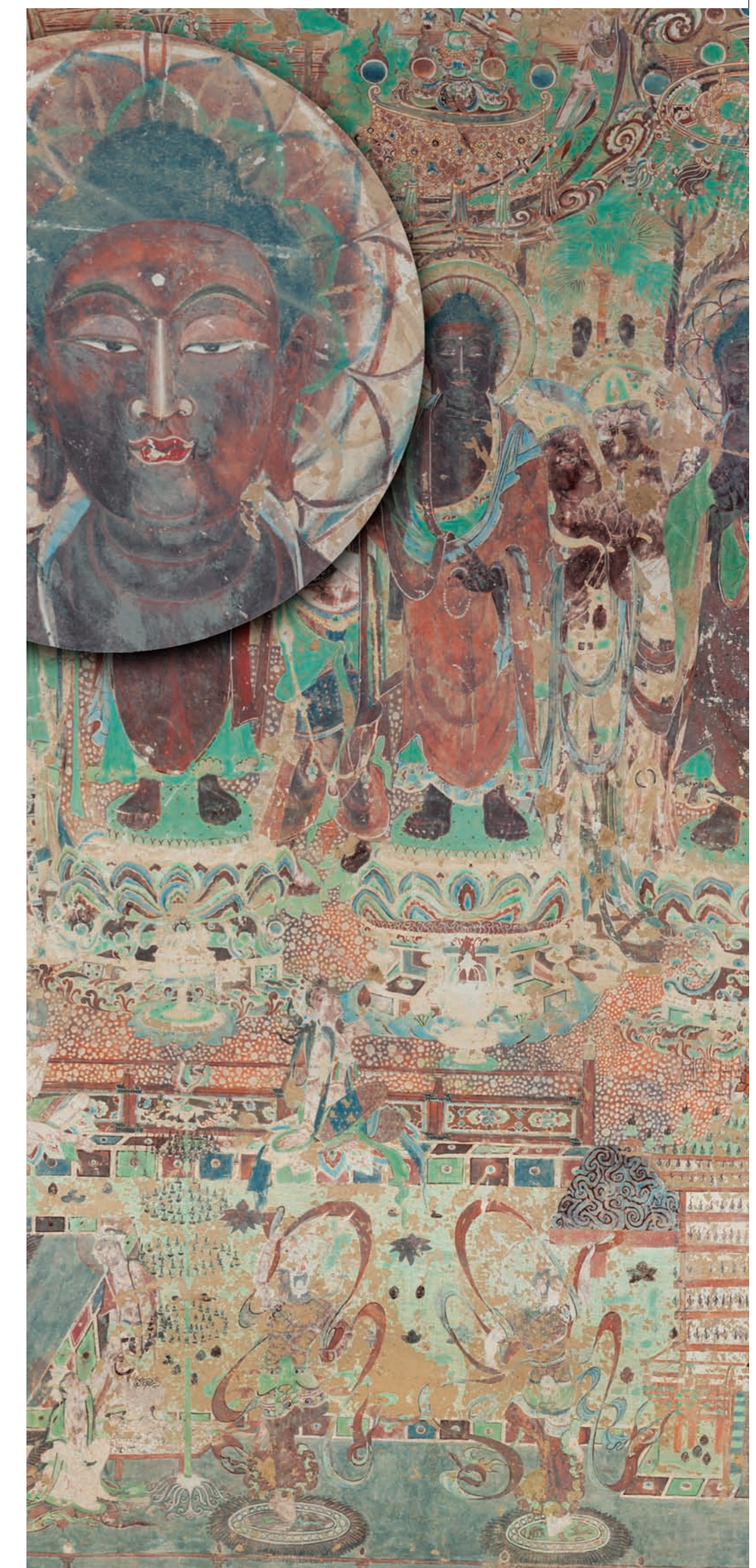


Pure Land Inside the Mogao Grottoes at Dunhuang



人間淨土

Gallery 360
 L8, Run Run Shaw Creative Media Centre
 18 Tat Hong Avenue, Kowloon Tong





Pure Land: Inside the Mogao Grottoes at Dunhuang

Pure Land immerses visitors in the quintessential heritage of hundreds of Buddhist grotto temples, an art treasury abounding with murals, statues and architectural monuments. This UNESCO World Heritage site, also known as the Caves of the Thousand Buddhas is located at Dunhuang, a small town in northwestern China that is an oasis in the Gobi desert. It was a gateway to and from China on the ancient Silk Road, which carried trade between China, western Asia and India from the 2nd century BC until the 14th century AD for over 1000 years.

Using pioneering virtual reality technology, artists and scientists at CityU have developed an extraordinary new animated 3D experience. Visitors are immersed in a large 360-degree panoramic projection theatre that gives a true-to-life experience of being inside a cave temple and seeing its magnificent Buddhist wall paintings at one-to-one scale. Figures and objects in these paintings are dramatized by means of spectacular interactive 3D animations and digital effects that reveal their painterly beauty and underlying narrative meanings.

Pure Land brings to life the story painted as a single composition on the north wall of Cave 220, known as Bhaiṣajyaguru's Eastern Paradise. The detailed mural depicts the paradise Eastern Pure Land of the Medicine Buddha, Bhaiṣajyaguru. It shows the seven forms or emanations that Bhaiṣajyaguru can assume as a healer. They stand in a row on lotus platforms with a pool below alongside numerous musicians that are accompanying four performing dancers. The Bhaiṣajyaguru sutra tells of the twelve great vows of the Buddha, relating to the provision of food, drink, clothing, medicine, and spiritual aids. Devotees were encouraged to light lamps in worship and this is depicted in this painting to either side of the musicians and in the altar with lamps between the dancers.

The Making of *Pure Land*

Pure Land : Inside the Mogao Grottoes at Dunhuang has been produced by the CityU Applied Laboratory for Interactive Visualization and Embodiment (ALiVE) in partnership with the Dunhuang Academy and the Friends of Dunhuang Hong Kong. Thirty people creatively contributed to this project in various capacities over a six-month period. These specialists include world-leading authorities on art history and the mural paintings of the Mogao Caves from the Dunhuang Academy. Based on their advice and art direction, the project's team of artists and animators were able to redraw, restore and recolor key iconographic elements in the wall painting, and create its 3D animated objects and dance sequences. Pictorial and digital artists, interaction and sound designers as well as software engineers together implemented the *Pure Land* scenography based on an interpretive script developed in close consultation with the project's sponsor and partners.

New Technologies and the Future of Cave Interpretation

There are over 700 caves at the site of Dunhuang, of which 492 still contain rich murals and sculptures. In order to ensure their long-term preservations, the Dunhuang Academy only opens a few caves at a time to visitors, who view the cave walls using small torch lights that often reflect through glass panels set up to protect the murals.

At Dunhuang there is an obvious tension between the desire to show this rich and important treasury to the world and the ongoing protection of the caves. The dilemma faced by the custodians of the site may be resolved through new technologies and virtual facsimiles such as *Pure Land*. A *New York Times* journalist who visited Dunhuang wrote:

And Mogaoku is in trouble. Thrown open to visitors in recent decades, the site has been swamped by tourists in the past few years. The caves now suffer from high levels of carbon dioxide and humidity, which are severely undermining conservation efforts. The short-term solution has been to limit the number of caves that can be visited and to admit people only on timed tours, but the deterioration continues...Plans are under way to recast the entire Dunhuang experience in a way that will both intensify and distance it. Digital technology will give visitors a kind of total immersion encounter with the caves impossible before now...

Cotter, H. 2008, "Buddha's Caves", July 6, 2008, *New York Times* (<http://www.nytimes.com/2008/07/06/arts/design/06cott.html?pagewanted=1>).

Closing important and unique world heritage caves to ensure preservation is an increasing worldwide practice as for example France's Lascaux Caves and Spain's famous Altamira Cave. Today, when the needs of heritage conservation and preservation are increasingly recognised, digital tools such as laser scanning and high-resolution photography occupy crucial roles in providing continuing access for nonspecialists and scholars to sites under threat. The Mogao Grottoes have been subject to extensive digital imaging for conservation, preservation and education undertaken by the custodians of the site, the Dunhuang Academy. The photographic projects at Dunhuang, unparalleled in scale when compared to other world heritage sites, is a race to 'capture' and preserve the caves before any more degradation can occur.

Pure Land's use of this high-resolution photography and laser scanning data constitutes a 1:1 scale virtual facsimile that reframes and reconstitutes the extraordinary wealth of paintings found in the caves at Dunhuang. The datasets of Cave 220, with its richly narrative murals, become the subject for innovation in heritage interpretation by augmenting its architectural and photographic representations with animation, 3D modeling, pictorial re-coloring, digital enlargement and a rich sound design. These multi-layered multi-media enhancements can be interactively explored, analyzed and understood as an embodied 3D visual experience that brings new life to the aesthetic, narrative and spiritual drama of these extraordinary cave paintings and sculptures. In this way *Pure Land* provides ground breaking conceptual, technological and operational paradigms for the future of digital preservation, cultural heritage interpretation, and an embodied museography.

Credits

Project Donor	Mr Gabriel Yu (Chairman of Executive Committee of Friends of Dunhuang Hong Kong)
Project Conception/Direction	Dr Sarah Kenderdine, Prof Jeffrey Shaw (CityU)
Art Direction/Interpretation/Script	Ms Lou Jie (Dunhuang Academy)
Cave 220 Dataset	Mr Wu Jian (Dunhuang Academy)
Art Advisor	Mrs Lee Mei-Yin (Special Researcher with Dunhuang Academy, Friends of Dunhuang Hong Kong)
Software Application	Mr Mo Luk, Mr Leith Chan
AVIE Projection Environment	UNSW, Immersive Realisation

