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ALL THE WORLD'S A DIGITAL STAGE

Researchers are using UQ-developed 3D technology to bring theatres and galleries to life.

Theatres and galleries have long captivated the public, and when empty, their vast quietude invokes a sense of curiosity and calm. In the words of philosopher Henri Lefebvre, "space is never empty: it always embodies a meaning."

When Professor Joanne Tompkins from UQ's School of Communication and Arts wanted to explore theatres she couldn't access – because they were being used – she turned to virtual reality.

Her research found the investigation of cultural spaces through a virtual lens to be a valuable tool in 'real world' empirical research in theatre and spatiality.

"My research focuses on space: how the venue in which a play is performed or an exhibition installed makes such a difference to the effect and the impact of a play or exhibition," Professor Tompkins says.

"We don't look at an exhibition just in terms of the art: we look at it in context and in the light of the venue."

In 2001, in collaboration with UniQuest, UQ's main commercialisation company, and Lazaros Kastanis, then at UQ's Advanced Computation Modelling Centre, Professor Tompkins informed the development of Ortelia. The collaboration now also includes modeller Darren Pack.

Ortelia, named after Abraham Ortelius, the geographer and cartographer who compiled the first atlas Theatrum Orbis Terrarum, is a virtual reality modelling program which creates 3D models of real cultural spaces.

The 3D modelling technology has allowed the Ortelia team to recreate both modern and historical theatres, such as the Rose Theatre where some of Shakespeare's early plays were performed, the Bergen Theatre in Norway where Henrik Ibsen learned his craft, and Adelaide's Queen's Theatre, the oldest extant theatre on Australia's mainland.

"Ortelia provides entry to theatres that have been demolished or lost, or even those that have been refurbished to such an extent that their origins are only a memory," Professor Tompkins says.

An Ortelia environment begins with a 3D model of a venue, built up from the geometry and dimensions of the actual site, covered with detailed images of the surface textures.

The models show a high degree of detail, down to the position of electrical outlets, light switches, and other essential features of an indoor cultural space.

They also demonstrate a venue's aesthetic features such as paint and stonework.

The commercial arm of Ortelia licenses the technology to other companies and organisations, including more than 50 art galleries and museums across Australia, allowing them to make their collections more accessible than ever.

For galleries and museums, a model is generally prepared 'empty' – that is, without an exhibition in place. The Ortelia-developed curator tools make it simple to place pieces in planning or recreating an exhibition. Using Ortelia, galleries and museums can also create digital archives of exhibitions.

This technology also allows remote communities to virtually access artefacts that are held in museums and other collections.

The Mobile Museum project, led by UQ's Associate Professor Graeme Were, drew on the Queensland Museum's collection to create detailed 3D renderings of cultural artefacts originally from the remote New Ireland province of Papua New Guinea.

This allowed cultural custodians in the region to examine the artefacts on a mobile phone app or CD-ROM, and work out exactly how they were made.

Treading historical boards

Using 3D technology to recreate historical theatres provides researchers with a new understanding of what it would have meant to stage plays in these theatres.

"It provides a much deeper sense of what performance in such a venue might have meant, and affects how we might think about performing such plays today," Professor Tompkins says.

The Rose Theatre was built in 1587 in London, and played an important role in the

development of the theatre of Shakespeare's time, before being demolished in the early part of the seventeenth century.

"Researchers have had to speculate how performance took place there, often based on assumptions relating to much larger theatres, which also no longer exist," Professor Tompkins says.

"We, on the other hand, have been able to establish how several aspects of performance would have worked in venues such as this.

"Recreating venues in virtual reality format provides the opportunity for us to position ourselves anywhere in the venue to check sightlines, for instance. It also permits the recreation of technical developments of the day to see how they would have affected performance."

Modelling the Bergen Theatre, where Henrik Ibsen first worked, has allowed the researchers to understand the context he worked and which almost certainly affected his choices of props and lighting in the major plays that he later wrote.

"These relationships are curiously unexplored, likely because there haven't been the structural opportunities to explore them before the advent of virtual reality," Professor Tompkins says.

Art of Nation

Another major project for Ortelia has been creating a virtual home for the Australian War Memorial's World War I art collection.

In 1919, shortly after he returned from the battlefields of Europe, Charles Bean sketched out a vision for an Australian war memorial museum.

The Australian War Memorial that eventually opened in 1941 was very different from the one Bean had envisaged, but now Ortelia is helping to bring his original plan to life.

The Art of Nation, an interactive online exhibition launched in November 2017 as part of the Australian War Memorial's Remembrance Day events, consists of a 3D navigable building based on Bean's original sketches.

As users move through the building, they will be able to explore the Memorial's collection of World War I art and photography.

Over 70 large paintings are displayed together for the first time as Bean intended, in a dedicated art gallery.

Each painting is linked to maps of where the official war artists travelled in World War I, and pinned to Google Maps. This allows viewers to use the Google Street View function to compare the historical paintings with how the places look today.

The exhibition also recreates for the first time an official photography collection that was displayed in London in 1918.

This collection includes Frank Hurley's famous composite prints, which combine several negatives to create one photograph. The digital exhibition includes animations attached to each photograph, showing how the composite was created.

According to Dr Anthea Gunn, Senior Curator of Art at the Australian War Memorial, the 3D modelling technology has set a new standard for exhibition engagement.

"Ortelia were vital to shaping an idea into reality. Art of Nation is a new form of online content delivery for the Memorial, and Ortelia worked collaboratively with curators to deliver our vision for the project," Dr Gunn says.

"They shared our passion for the collection and making it accessible in new ways, so it's been both enjoyable and productive to work together."

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