Scientists Bring 2000 year old painted warrior to virtual live

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A 2000-year-old painted statue is being restored to her original glory by scientists from WMG at the University of Warwick, the University of Southampton, and the Herculaneum Conservation Project.

The Roman statue was discovered by the Herculaneum Conservation Project in the ancient ruins of Herculaneum, a town preserved in the same eruption that buried nearby Pompeii in AD 79. It is thought to represent a wounded Amazon warrior, complete with painted hair and eyes preserved by the ash that buried the town. Archaeologists at the University of Southampton and the Herculaneum Conservation Project contacted WMG after hearing about the Group's expertise in three key technologies: high resolution laser scanning, rapid prototyping and ultra-realistic computer graphics.

Researchers from WMG at the University of Warwick, Southampton and Herculaneum are now scanning, modelling and digitally recreating the Amazon statue.

Dr Mark Williams, a leader in laser measurement at WMG, took his team and equipment to the site. He said: "The statue is an incredible find. Although its age alone makes it valuable, it is unique because it has retained the original painted surface, preserved under the volcanic material that buried Herculaneum."

Dr Williams used state-of-the-art equipment to accurately measure (within 0.05 of a millimetre) every surface of the bust and translated that

information into a computer model. Dr Greg Gibbons, also of WMG, then used rapid prototyping to create a physical 3D model of the head revealing the smallest detail.

Further recording was carried out on site by experts in archaeological computing from Southampton, led by Dr Graeme Earl. They used a novel form of photography which provided an extremely detailed record of the texture and colour of the painted surfaces.

Dr Earl said: "Cutting edge techniques are vital to the recording of cultural heritage material, since so much remains unstudied or too fragile to analyse. Our work at Southampton attempts to bridge the gap between computing and archaeology in bringing the best that colleagues in engineering have to offer to unique artefacts from our past."

The Southampton team is now digitally re-modelling and re-painting the sculpture. They are using techniques derived from the film industry to recreate the original carved and painted surfaces.

In the final step Professor Alan Chalmers, head of WMG's visualisation team and an expert in ultra-realistic graphics, will apply techniques to the computer model to exactly reproduce the lighting and environmental conditions under which the painted statue would have originally been created and displayed. This visualisation will provide archaeologists with an otherwise impossible view of how the original statue may have looked in context, and allow them to experiment with alternative hypotheses.

Professor Chalmers said: "Our work will be used both for educational and research purposes to give people new insights into the statue's design, to provide a record for conservators, and to explore how it may have been appreciated over 2000 years ago."

Source: University of Warwick