History in 3D

November 2 2009

Virtual archive for works of art from all over the world: Objects will be reproduced three-dimensionally. (© Fraunhofer IGD)

(PhysOrg.com) -- Three-dimensional computer graphics is moving into museums. Works of art are being digitally archived in 3D, simplifying research into related artifacts and providing the public with fascinating three-dimensional displays.

If you don't have the time to travel to Florence, you can still see Michelangelo's statue of David on the Internet, revolving in true-to-life 3D around its own axis. This is a preview of what scientists are developing in the European joint project 3D-COFORM. The project aims to digitize the heritage in museums and provide a virtual archive for works of art from all over the world. Vases, ancient spears and even

complete temples will be reproduced three-dimensionally. In a few years' time museum visitors will be able to revolve Roman amphorae through 360 degrees on screen, or take off on a virtual flight around a temple.

The virtual collection will be especially useful to researchers seeking comparable works by the same artist, or related anthropological artifacts otherwise forgotten in some remote archive. The digital archive will be intelligent, searching for and linking objects stored in its database. For instance, a search for Greek vases from the sixth century BC with at least two handles will retrieve corresponding objects from collections all over the world.

3D documentation provides a major advance over the current printed catalogs containing pictures of objects, or written descriptions. A set of 3D data presents the object from all angles, providing information of value to conservators, such as the condition of the surface or a particular color. As the statue of David shows, impressive 3D animations of art objects already exist. "But we are still a long way from being able to sensibly correlate 3D data between different objects," says Dr. André Stork, Head of Department at the Fraunhofer Institute for Computer Graphics Research IGD in Darmstadt and a partner in the 3D-COFORM consortium.

Stork and his team are generating 3D models and processing them for the digital archive. "A 3D scan is basically a cloud of measured points. Further processing is required to map the object properly," Stork explains. Researchers are developing calculation specifications to derive the actual object from the measured data. The software must be able to identify specific structures, such as the arms on a statue or columns on a building, as well as recognizing recurring patterns on vases. A virtual presentation also needs to include a true visual image - a picture of a temple would not be realistic if the shadows cast by its columns were not properly depicted. The research group in Darmstadt is therefore

combining various techniques to simulate light effects.

Provided by Fraunhofer-Gesellschaft ([news](#) : [web](#))

Citation: History in 3D (2009, November 2) retrieved 20 March 2024 from
https://phys.org/news/2009-11-history-3d.html