

Art & Science Meet at the Hermitage in St Petersburg



Hermitage lecture by Hans Bjelkhagen.

Dr Hans Bjelkhagen gave a seminar at The State Hermitage Museum (St Petersburg) in December 2016, organised in cooperation with University of Information Technologies, Mechanics and Optics (ITMO University), entitled: 'Museum Documentation: Holographic OptoClones & Digital Holography'.

The seminar was the second in a series that began in November 2016 and will finish in June 2017. The aim of the seminars is to explore the interaction of science and art in the modern world and demonstrate diverse applications of scientific research in artistic and museum practices globally.

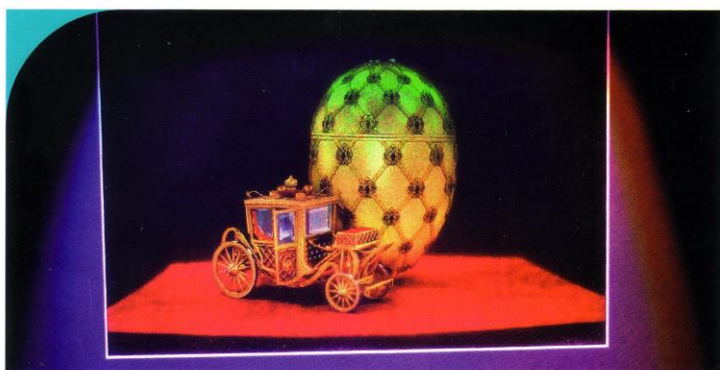
Over 200 participants including scientists, artists, conservators and curators attended the evening seminar presentation. The new *OptoClones™* (single-beam Denisyuk colour holograms, see HN March 2016) of museum artefacts were described, both the ones recorded in the UK and the most recent ones recorded of the Russian Fabergé Imperial Eggs.

A hologram exhibition was also organised by the Hellenic Institute of Holography (HiH), Greece. On display were *OptoClones* and digitally produced colour holograms.

Special display cases equipped with the integrated red, green, blue (RGB) LED illumination were used for the *OptoClones* to achieve the highest possible image quality.

Exhibits also included a digital colour hologram of the Coronation Fabergé Easter Egg – one of the most recognisable of the original Fabergé eggs.

This was photographed at high-definition by Elena Bobritskaya (ITMO University), Alexey Pomigalov (Fabergé Museum) and Andreas Sarakinos (HiH). A multitude of orthographic views were rendered at image resolutions resulting in translating approximately 200 GB of raw data into individual pixels.



Digital colour hologram of the Coronation Fabergé Easter Egg.



Two views of the Saint Petersburg Lavra Church digital hologram printed by GEOLA.

The hologram was made by Ian Redmond at Ceres Holographics, UK, with computer-generated modelling by Alan Redmond. The colour full-parallax digital hologram was recorded on BAYER *Bayfol HX* photopolymer and transferred on a glass plate, size 29 x 21 cm landscape.

Another digital colour hologram on display was the St Petersburg Lavra Church (located within the 17th Century Alexander Nevsky Monastery).

The hologram originated from the project '3D Visualization of Historical Monuments in St Petersburg' and was created with digital input from Russian-made drones that flew over selected churches of St Petersburg.

The digital footage (filmed by Geo-Scan) was then used for computer 3D models of the monuments, for stereoscopic viewing with large-format back-lit lenticular prints and for digital colour holograms – size 60 x 80 cm.

The project was commissioned by MIR NAUKI (a joint-company of ITMO University and the City of St Petersburg) and coordinated by HiH. The first colour holograms were printed on film by GEOLA in Vilnius.

OptoClone™ is a registered trademark of the Hellenic Institute of Holography (EU-013865951).

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