

Interview Dr John Perry

Holographic North

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Holographic multiplex for portrait and other holographic image: The Queen



A 3-D hologram image of the Queen - the first royal portrait of its kind - has been unveiled.

The image of the unsmiling Queen, is lit with blue light and appears to move as the viewer walks past. The portrait is a result of a creative collaboration between holographer Rob Munday and artist Chris Levine with other contributions from Jeffrey Robb of Spatial Imaging, John Perry of Holographics North , USA , independent photographer Nina Duncan, Stuart Winsborough of Wicks and Wilson and computer graphics specialist Richard Bainbridge.

A holographic stereogram portrait is normally made from a sequence of up to 400 images taken of the sitter from

multiple angles of view using a specially designed moving camera. For the project of the Queen and because of many restrictions in shooting the portrait, Spatial Imaging recently created a high quality lenticular photograph and a full colour, three dimensional animated portrait using the latest auto-stereoscopic 'glasses free' LCD monitor technology. In order to create the required parallax image sequences a unique digital camera recording system has been build utilizing the latest computerised three-dimensional head scanning technology to create a computer model of the Queen' head from which parallax images sequences could be computer generated. A interesting side benefit of holographic stereography is the fact that the resultant 'parallax' image sequences can be archived and used to produce many other types of holograms and three-dimensional images.

BACKGROUND:

British artist Chris Levine was given the commission in 2004 to create a royal portrait of Queen Elizabeth II. He decided that this should be a large format hologram of the queen, to be illuminated in a deep, royal blue color. Levine contacted Rob Munday at the British company Spatial Imaging for production assistance with the hologram. And Spatial Imaging contacted Dr. John Perry of Holographics North Inc. (HNI) in the US.

HNI specializes in large format hologram production, with sizes up to 1.1x1.8 meters, and focused image depths up to 8 meters. The company had collaborated very successfully with Spatial Imaging on several projects over the previous 8 years, jointly earning the Best Display of 2003 award from the International Hologram Marketers' Association.

Munday designed and built a track and camera system to capture the necessary 200 photographic frames of the Her Majesty, each seen from a slightly different horizontal perspective. Levine and Munday

were joined by Spatial's Jeffrey Robb for two photo sessions with the Queen in Buckingham Palace, in the Fall of 2003, and early Spring of 2004.

HOLOGRAM PRODUCTION:

A 200-frame sequence of digital images was chosen by Levine, in consultation with the Queen, and sent in digital form to Holographics North. Dr. Perry made slight corrections to tonal range and framing, and recorded the images onto 35mm film.

The production of the hologram then followed in 2 steps. First, HNI's unique large format stereogram printer was employed to produce a 1.1 meter-wide hologram master from the 35mm film frames. This step is based on technology pioneered by the late Dr. Stephen Benton at MIT.

Essentially, each 2-dimensional photographic image is recorded, using laser light, into a different horizontal position on the master film. When viewing this master hologram, the left and right eyes always see a stereo pair of rotated images, producing a 3-D view. The rotation of the images arises from the movement of the camera down the track, when the subject was originally photographed. Production of a master takes 8 hours with HNI's automated, computer controlled stereogram printer.

The master was then illuminated in the usual way to produce a laser-light image, and a second hologram, the "transfer" is made of that image. The transfer is the final display hologram.

Levine joined Perry at HNI for several of the hologram production steps. The master for the final hologram was repeated 5 times, with slight alterations to correct for distortions resulting from the deep blue illumination, as well as several dark shadow areas in the original image files. Several weeks of testing were also required

to achieve perfect tonal values in the transfer hologram.

INSTALLATION AND REACTION:

Dr. Perry assisted Levine with the hologram installation in the Queen's Gallery at Buckingham Palace in June, 2004. The illumination source is a vertical row of LED chips, each emitting a deep blue color. This produces the monochromatic image, while maintaining a large vertical viewing field.

Several viewers have commented on the choice of a monochromatic image over a full color hologram. This subjective choice by the artist can be evaluated to some degree by considering exactly what a full color hologram of the Queen would look like. Is there added value in added realism?

Many other viewers have commented on the lack of animation, since Her Majesty was instructed remain still during the photo sequence, whereas she could have moved, resulting in image animation as you walk past the hologram. Once again, would this have improved an already compelling portrait of the Queen?

Levine's choices of lighting and dress for Her Majesty are at core of the success of this portrait. The holographic presentation, in its unique spectral blue, adds yet another layer to the quality.