Student works shine in Next Dimension

UTAC and the Institute for Optical Sciences explore the potential of holography, a convergence of art and science

Written by Miriam Arbus

The new exhibit at the University of Toronto Art Centre is an interdisciplinary convergence of the fine arts and the sciences. The Next Dimension: Holograms for Optical Sciences, in conjunction with the Institute for Optical Sciences, features the work of undergraduate students who have taken U of T’s Holography course since it was first offered in 2008. The Next Dimension is a delightful, but challenging, aesthetic experience.

Located in the UTAC lounge, The Next Dimension aims to inform visitors of the research and development produced by the Holography course, and also offers a challenge to current understandings of the potentials offered by this medium. A selection of screen-like holographic plates are displayed, each of which are intentionally illuminated by individual lamps. Each plate was designed by undergraduate students, and displays individual three dimensional images or sequences.

Emanuel Istrate, professor and coordinator of the Holography course and exhibition, elaborated on the method of exhibition. He explained that the boxes and stands were created purposefully, intended as medium-specific displays that would both attract the viewer and help situate the holographic plate as artwork in the gallery setting.

Holographic renderings such as those displayed in this exhibition are created in a similar process to the photograph, where light is used to capture the image of objects. In the holography studio, objects are placed in front of the holographic plate, and laser-light rays are directed at the scene. The holographic plate captures the way the light scatters upon illuminating the object. The result is a recording of all the involved perspectives – therefore creating multi-dimensionality.

Though holography was developed in 1947, public knowledge concerning this scientific medium is fairly limited. Many people simply associate holography with its token appearances in science fiction movies. The intricate technology required for producing holograms and the associated high costs have contributed to the lack of knowledge surrounding the potential of...
Istrate described the Holography course as a practical, hands-on method for understanding the mechanisms and applications of holographic research. Multi-disciplinarity is essential; Istrate explained that his teaching methodology is intended to challenge students from varying academic backgrounds to acquire new abilities. Taught collaboratively by Istrate and a fine-arts professor from OCAD U, this course offers an alternative, interdisciplinary method for comprehending scientific theories and equations.

Istrate explained that in the sciences, students must approach complex methodologies and theories starting with the equations. By first learning how to create holograms, Istrate hopes to provide a unique method for understanding scientific equations, and for advancing the development of students’ research abilities. This interdisciplinary environment brings fine-arts and science students together in a distinctively co-operative learning environment.

Holographic research has potential in a variety of fields. Holograms allow for the study of minute details of an imaged object. The multi-faceted perspectives that result from the recording of scattered light allow a closer look at minuscule discrepancies in such objects as damaged jet engine turbines, or a malfunctioning car’s wheel bearings. Microscopic holograms can distinguish between transparent substances, making it possible to view cells or chemical substances.

The future of holography promises the capacity for large scale information and data storage. One holographic plate has the potential to hold an unfathomable amount of data, explained Istrate, but because of the costliness of such endeavours, the mass use of holograms is a long way away.

The holograms displayed in *The Next Dimension* engage the viewer both aesthetically and intellectually as perceptions are challenged by the seemingly impossible 3D existence on a 2D plane. The ethereal quality of the images transform from two to three dimensions upon one’s own movement around the holographic plate, which produces the full perspective of the imaged object.

Istrate explained that photographic documentation of holograms jeopardizes the captivating three-dimensional quality, and suggested that, “you really just have to come and see them for yourself.”

*The Next Dimension: Holograms for Optical Sciences* can be found at the UTAC Lounge, 15 King’s College Circle, from November 8 – December 2, 2011.

[Click here for more information on Holography courses](http://thenewspaper.ca/the-inside/item/676-student-works-shine-in-next-dimension?tmpl=component&print=1)