What is holography and how does it work?

A brief overview by Anaka Marie Wetch

Dennis Gabor invented holography in 1947. At the time he was working on the improvement of the optical microscope. In the 1960s and 70s there was a surge in interest for the medium. Even though today holography is considered niche or underground, with the improvement of optics, lasers, and recording material one could argue that the artform has more potential than ever.

Holography is the practice of creating holograms using optics. Some tools that are necessary to create a hologram are: laser, shutter, mirror, spatial filter, plate holder, recording material, and an object. A hologram is a recording of interference of light waves produced by a laser. Holograms are recorded on a medium with an emulsion that is light sensitive. Holograms have the ability to form visual depth cues such as parallax and perspective. As the viewer changes position they see different angles of the object in three dimensional space.

The function of light in the creating holograms is critical. In the most basic setup for creating a hologram, the interference patterns from the laser beam re-create the three dimensional image on the glass plate by bouncing off the model or object, crossing back on themselves and becoming recorded on a light sensitive emulsion.

Two types of holographic recording mediums are silver halide and photo-polymer plates. Silver halide recording plates are processed and developed with specific photo-chemistry. Photo-polymer plates develop in white light without the use of photo-chemistry.