

03. Holography vs Photography

Holograms have little in common with traditional photograph [2]. In photography, the lens of the camera reproduces on the photographic film an idol of the artefact/ object, creating in that way a two-dimensional image [1]. Holography is based on the principles of interference [5]. The object is illuminated by a laser beam. The light that is reflected from the object comes by/hits a special photosensitive plate without being interrupted by a lens. In contrast to photography, the photosensitive plate is also illuminated by the incident (reference) beam, which is (again) the beam of the laser [3]. The two beams (the one of the object and the one of the laser) interact on the plate and the result is an interference of bright and dark lines that are captured on the board and consist the hologram. The holographic replica is reproduced when the hologram is illuminated by a proper light source. To be more specific, the structure that has been created on the photosensitive plate during the aforementioned procedure, diffracts the reflected light in waves of light, which are the replicas of the primary beams. The result is a three-dimensional idol which embeds the entire information (of the third dimension) in hyper-high definition. Moreover, unlike to the photographic film, every piece of the holographic film can reconstruct the entire image [4].



Figure 1: Every piece of the holographic film can reconstruct the entire image, stills from the video [4]

References – Resources

1. The Free Dictionary by Farlex, Definition of holography, Retrieved from: <https://www.thefreedictionary.com/holography>
2. Smith, T.G. (1972) "Introduction to Holography", video published by *Encyclopedia Britannica*, Retrieved from: <https://archive.org/details/IntroductionToHolography>
3. Hellenic Institute of Holography, Retrieved from: <http://www.hih.org.gr/en/holography-a-3d/introduction-to-holography.html> (2018, September, available only in Greek)
4. Encyclopedia Britannica, Entry: Holography, Written By: The Editors of Encyclopaedia Britannica, Retrieved from: <https://www.britannica.com/technology/holography>
5. Holocenter, center for the holographic Arts, "What is Holography?", Retrieved from: <http://holocenter.org/what-is-holography/>

HOLOMAKERS PROJECT

Motivating secondary school students towards STEM careers through hologram making and innovative virtual image processing practices with direct links to current research and laboratory practices

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Declaration

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