

02. Holography and the reproduction of the third dimension

First of all, it is crucial to realize the significance of holography as a mean of a three-dimensional representation. The accurate representation of third dimension is an effect that many media have studied and tried to recreate. Painters from the epoque of renaissance for example, tried to render the third dimension through converging lines and the use of perspective. Contemporary technologies are employing polarized lens, or other optical decoders in order to reproduce the stereoscopic sense, while the contemporary computer software are utilizing the effects of motion and rotation for the same purpose [1]. However, it is argued that these media are unable to fully communicate the characteristics of a real objects [2]. Holograms are able to successfully recreate the third dimension through the accurate representation of depth and parallax. Therefore, the success of holography is that It can produce an artefact (hologram) that can hardly be distinguished from the real object, since it provides to the viewer the ability of observing it from multiple perspectives. The three-dimensional sense is amplified by four parameters:

- a. the reflection of light on the “surface” of holographic representation,
- b. the intense shades,
- c. the accurate representation of materials and textures, but mostly
- d. the creation of horizontal and vertical parallax effect.

The success of holography, on creating realistic three-dimensional representations, is also attributed to the fact that an hologram can capture and reproduce the waves of light reflected by an object/artefact. These waves are also those that can be perceived as well as make an object visible to human eye [1].

References – Resources

1. The Free Dictionary by Farlex, Definition of holography, Retrieved from: <https://www.thefreedictionary.com/holography>
2. Freedman, D.H. (2002) “Holograms in Motion: The newest 3-D video displays herald an interactive future for imaging”, *Intelligent Machines*, Retrieved from: <https://www.technologyreview.com/s/401697/holograms-in-motion/>

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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