

06. Types of holograms

There are two main types of holograms, namely the reflection holograms and the transmission holograms [1]. Reflection holograms are the most common and can be usually found in galleries. A white incandescent light, placed in a specific angle and distance, is used to illuminate the hologram [1]. The viewer has to be at the side of the light in order to be able to see the artefact, while the colored holograms that belong to this type can be barely distinguished from the original object. Transmission holograms can be viewed under the same laser light that was utilized for the creation of the initial recording. [1] If this type of holograms will be cut into pieces, then each one of them will still be able to reproduce the whole hologram. There are also other types of holograms that combine both of the aforementioned categories and thus they are called hybrid holograms. Therefore, there are the embossed holograms which are massively produced and are utilized for authentication reasons, the integral holograms which are holograms that produced from a series of photographs or transparencies of the artefact, the holographic interferometry in which the viewer can detect microscopic changes, the multichannel holograms in which differences of viewing light can be detected, and finally the computer-generated holograms which are holograms that are calculated with the use of computer software [1]. Other research classify holograms according to the area and the purpose that they utilized (e.g. optics, medicine, IT, art, security etc.) [2]. It is also argued that different kinds of holograms can be created in respect to “different holographic optical elements (HOE)” as well as to different holographic electronic elements (HEE) [2]. Moreover, it is suggested that the type of hologram can vary according to the nature of the holographic object and also in respect to the “positions, numbers and the angles of the reference and object beams” [2]. Another categorization can arise from the different method of copying and reconstruction of holograms [2], but again, these categories are hybrid types that oscillate between reflection and transmission holograms.

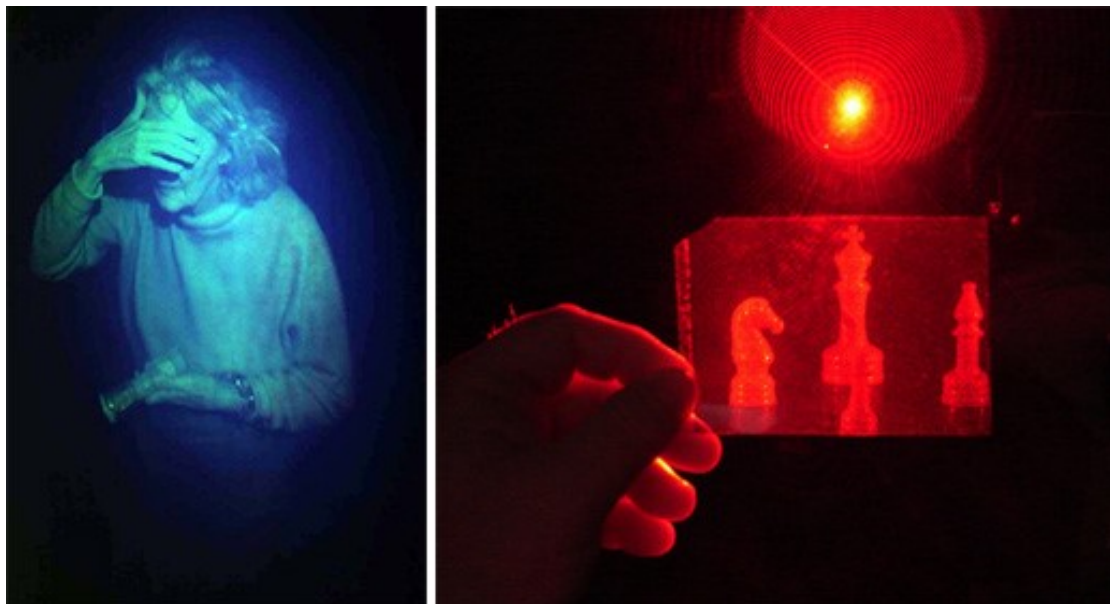


Figure 1: Reflection hologram (left [3]), transmission hologram (right [4])

References – Resources

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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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Creators

Chrysanthi Papasarantou (EDUMOTIVA)

Rene Alimisi (EDUMOTIVA)

Declaration

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