

Innovative interactive ideology to enforcement Hologram technologies to promote tourism activities in Egypt

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Abstract:

When the global economist, Rothschild, was asked what if he had a budget of \$ 1,000 for a project, he replied that he would spend \$ 900 of them on marketing and only \$ 100 on the project. This is an indication of the importance of marketing as a factor for the success of any economic scheme. Holograms are to design backgrounds of artistic displays in architectural heritage and to develop strategies for their marketing that can be followed to attract tourism in Egypt

As Egypt is one of the most important countries that attract tourism, despite its containment of a third of the world's monuments and the Egyptian disregard for many of the factors of attraction as compared to the methods that are being activated around the world.

We focus on tourist visits to urban areas that contain cultural and archaeological heritage, so it is necessary to take into account when developing strategies for the swimming market. Increasing the attractions in other places by modern methods of tourism marketing and the use of high-energy, spontaneous and dazzling technical forms.

Then a review of the advantages and disadvantages of external offerings in heritage architecture, as well as advantages and disadvantages of using modern technologies such as laser and hologram scattering, discussing the nature of these techniques and methods of their use, and reviewing a set of previous models, methods and suggestions to be implemented in Egypt.

Keywords:

Idology, tourism, hologram

The research problem:

Not to exploit the effects and historical places and the lack of traditional capabilities to preserve them and protect them from damage, as well as the weakness of the possibilities of promoting them, visiting them and marketing them through the media channels.

Main questions:

Can flaws be hidden or adding effects to performances in outdoor scenes?

Can laser effects or holograms affect or add to this visual illusion?

Is it possible to beautify and create backgrounds in external shows in historical places without any of the expected damages?

The research objective:

The need to develop and market archaeological sites and activities established through them and to use hologram technology in these presentations

Results and recommendations:

Defects can be enriched or hidden, or add effects to archaeological sites and external presentations.

Effects of laser beams or holograms affect and add to the visual illusion required in some artistic performances.

Backgrounds can be beautified and created in external displays in historical places without any of the expected damages.

Introduction:

The cultural heritage of a certain country is a source of pride and a clear indication of cultural and national identity and the personality of the nation. It is a link between the present and the past. It also contributes greatly to shaping its future and is a major resource in the national economy, since tourism is an important source and a fertile material for scientific research.

Egypt is one of the largest countries in the world containing huge heritage of different forms of civilizations and also owns more than a third of the antiquities of the world and the state budget depends heavily on tourism which cannot be overlooked as being an important economic source. Traditional ways to promote tourism in countries are not enough to give better economic benefits out of these antiquities.

Side by side with making use of these antiquities and historical places, this cultural heritage must also be preserved and protected from damage despite the rising promotion for it and for visiting it.

At the end of the 20th century and the beginning of the twenty-first century, the importance of holographic or hologram technology began with the great progress in the systems of presentation and visual deception. This leads to the opening of new gates for the application of this technology in many fields and breaking the deadlock about the typical methods of presentation and the dazzling elements in cinema and the coverage of artistic events in an innovative way, in a method that is consistent with the spirit of the times, this technology was discovered by Denis Gabor in 1947 to improve the power of magnification in the electronic microscope and the idea is to evolve to the extent that Hologram was used as an intermediary 3D view With the help of Michigan and it was then possible to apply it in many ways such as recording images and for further illustration the art of hologram (that is the characteristic by which the image of objects can be reconstructed and transmitted by their three dimensions in space using laser. Through laser beam splitters, mirrors to guide the beam and lenses to focus the rays and finally the photographic plate, and with the spread of shows that make use of such historical places and with the repeated success of the experiment of making several performances of Opera Aida in Egypt, whether at the ancient pyramids or the city of Luxor temples, it has become of great interest to repeat such external presentations in many of the archaeological buildings that fill the rest of Egypt. *Perhaps the most extreme application of this technology* is the one which was made in the movie Oceans 12 where the hologram was

exploited in the process of stealing one of the precious antiques, where the use of holograms to inspire the eyes that it is still in place

In particular, these shows promote antiquities tremendously but with a set of requirements that will be tackled in this study, trying to find a formal system to make use of such historical places in the external presentations (shows) and increase the elements in it and, hence, increase the promotion without abusing them.

Perhaps this phenomenon made us think about the following problem:

- Is it possible to enrich or hide defects or add effects or add visual aids on the visual scene of the external shows of the effects?
- Can laser light effects be used to achieve visual deception?
- Is it possible to beautify and create unreal backgrounds on the displays of external effects to improve the image of those museum presentations?

This aims at:

Development and marketing of antiquities and activities of sanity through the activation of the technology of Hologram at exhibits.

Tourism marketing as one of the most important components of national economy:

When the world economist Rothschild was asked whether he had gone bankrupt and had only \$ 1,000, he replied that he was establishing a project of \$ 100 and marketing it for \$ 900. This is an indication of the importance of marketing, which should be taken into consideration as a factor in the success of a project or the promotion of an area.

The top ten countries exporting tourists with the expectation in 2020:

Country	1995	2020
Germany	75	153
Japan	23	142
America	63	123
China	5	100
England	42	95
France	21	55
Holland	22	46
Italy	16	35
Canada	19	31
Russia	12	31
Total	298	809

here we notice that the target numbers should be considered in a court plan to increase those numbers to restore the tourist attraction of the state and study samples of tourism targeted in Egypt, increase the rate of chines tourists, study growth rates and the arrangement of Egypt as an important tourist state, in the order of priorities tourist note the decline of Egypt Compared to many of the countries that precede it, which are much less than Egypt in touristic components.

The top favorite countries for Chinese tourists in 2006
Study objectives of tourists' visit

Country	The numbers of the incoming Chinese tourists in thousands	Growth Rate (%)
Singapore	557,2	16,8
Malaysia	435,2	22,7
Philippines	138,3	16,1
South Korea	1,098,2	30,2
Australia	345,0	8,5
New Zealand	58,6	1,8
Japan	1,280,0	14,6
Vietnam	506,6	-40,0
Cambodia	82,3	83,8
Myanmar	101,6	-61,5
Brunei	2,8	50,6
Malta	0,6	-24,4
Turkey	17,2	20,7
Egypt	21,7	69,7
Nepal	15,7	-20,6
Germany	257,7	12,2
India	47,1	37,9
Maldives Islands	6,5	173,1
Sri Lanka	7,3	79,7
South Africa	31,7	-404
Croatia	0,8	55,1
Hungary	17,9	-2,0
Pakistan	29,5	10,1
Cuba	3,3	-30,9

First: Results of Tourists' Survey:

Table: Objective of the Visit

The main objective of the trip	Repetition	percentage
Spending vacation	59	65,56
Accomplishing some work	13	14,44
Tourism and entertainment	18	20

This survey will help in the marketing strategies that can be followed. It is clear from the previous table that 65.56% came to visit Egypt and spend the vacation, while 14.44% came to accomplish some work, and 20% came for tourism and visiting touristic monuments

Tourist locations that are usually visited

Tourist Locations	Number	Percentage %
Cairo	54	60
Luxor	48	53,33
Aswan	48	53,33
Hurghada	30	33,33
Sinai	24	26,66
Alexandria	18	20
Port Said	4	4,44

It is clear from the previous table that Cairo occupies the first place for the visited locations with 60%, followed by Luxor and Aswan with 53.33% each, then Hurghada and the Red Sea with 33.33% and Sinai with its different regions (Sharm El-Sheikh Dahab) with 26.66%, then Alexandria with (20%) and Port Said at the end of the list with 4.44%. These results show the concentration of the visit in urban areas and areas containing cultural components and antiquities.

This is related to a large extent to the reasons for the selection of Egypt as a tourist destination, followed by natural areas that have a special environment and nature, such as the Red Sea and Sinai. This is also the one of the reasons for choosing to visit Egypt. This requires following different marketing strategies that focus on making use of various components to attract more tourists. (rabbo, 2013)

Factors that distinguish the Egyptian destination from the point of view of the Chinese tourists.

Attraction Factors	Number	Percentage (%)
Distinction of urban and rural areas	44	48,89
Cultural features	78	86,67
The special nature of the people	18	20
Tourist Attractions	42	46,67
Shopping potentials	6	,667

Recent trends in tourism marketing:

Using promotional channels

Expanding the establishment of special sites for tourist locations.

- Displaying movies with computer data shows.

Using the Internet as a mean of advertising and propaganda.

Expanding the enrichment of tourism agenda with new events (champions and various special events).

Introducing new dazzling means.

Using tourist caravans with multiple components (road show) and musical and artistic models.

Technological dazzling.

Using attractive logos and advertisement) sisi(2004 ,

Unlimited visibility of impact details.

This requires maintaining the tourist places and restoring them in a decent manner, as they are preserved only by maintaining them continuously and showing the shape of the antique in the most attractive form, in terms of its value and history, and the defects that cannot be saved for restoration and maintenance should be dealt with. This will be discussed in this study to avoid infringements on antiquities due to the impact presentations.

Advantages of external environmental shows in archaeological sites:

Making use of the place in presentations to save expenses for the construction of decorative and new backgrounds.

Ready-made backgrounds are more realistic and provide the desired expression in the presentation.

The interaction between the audience and theatrical presentation is more effective and powerful.

Promotion of tourism within archaeological sites

Making the place more attractive to the public

Economic returns for places that may be tourist-poor places

Therefore, the registration of shows and presenting them in the media as more media means more promotion for these places.

The disadvantages of external environmental shows in archaeological sites:

Not preserving the antique and making it more vulnerable.

Some defects in the antique (change that is liable to restoration).

Affecting the shape of backgrounds.

The impossibility of changing places and scenes in a fast interactive manner.

The impossibility of transporting the public easily within the show in order to preserve the antique.

Selecting limited types of shows or scripts to be displayed in these places.

Advantages of using modern techniques (holographic shows) for such presentations:

Introducing the three-dimensional concept to enrich the external display.

Hiding defects in the antique without touching it.

Changing scenes in a smart and fast manner.

Digital technologies allow for daily scene renewal for viewing conditions.

Disappearance and enhancement of the interactive presentation between the audience and the spectator.

Highlights of digital techniques and laser techniques are more than traditional techniques used in traditional presentations.

Problems of damage and direct use of the background are harmful.

Available economic return for the touristic antique to increase the dazzling elements in the form

The Impact of Digital Arts (Electronic Revolution):

Digital arts and the electronic revolution have made tremendous progress in the interactive field.

Most of the arts of presentations are television or film materials in one trend, while theatrical performances and life offers produce a bilateral connection between the viewers and the display, now it is not fair for denial of the background and place of the presentation as a mutually

influential element for audiences, total theatrical presentation elements significantly are not only the place and the environment of the show. It also enriches the creative processes in the various environmental presentations forms and becomes a mean of creativity and increase immersion of the viewer into virtual reality to feed his/her sense of the show and their interaction with it.

Technological means for processing of environments show:

Virtual reality Arts include the art of holograms which is a trilogy and two-dimensional laser art.

Laser Arts:

It emits a beam of light and devices to amplify the light so that a relatively high energy is converted to high-energy light rays.

Apart from the natural or artificial traditional means of light, the laser is the only type of light whose forms can be controlled. It is used when we have new or unique ideas, especially with its amazing permanent developments, which has turned into different types of holograms to convert the image from the wall and creative two-dimensional to a collection of art works of the 3D dimensions in void, where images turn into a stereotype, and emerges the best that the designer mind might has for his artistic work, that gives the sense of the embodiment and the rotation of the scene as it gives multiple visual contributions, which affects the process of creativity.

It is also used in the process of the designer's production of scenes and designing environments and the show, including features that support the ability of the designer to design and connect scenes to be considered and distributed in a convenient and easy way, in both binary and three dimensions' form.

-It also has a tremendous ability to fix the defects of the real scenes in an existing environmental show.

Methods and Applications of Optical Holography

Dennis Gabor invented holography in 1947 (*Nobel Prize in 1971*). It was dedicated for microscopy as was indicated in the article "Microscopy by Reconstructed Wave fronts" Gabor introduced the term of holography, using two Greek words: 'Holos' – whole and 'Graphe' – writing. These two words mean that the recorded holographic image of the object contains whole optical information about the object – amplitude and phase information of the light scattered from the object.

The word 'Holos' was used to distinguish the holography from photography, since in photography information of amplitude of the light which is recorded only. Typically, the hologram is a three-dimensional image reproduced from interference pattern recorded by coherent light beams, and holography is a process of writing or reconstructing a hologram.

At the time when Gabor invented holography there was no coherent sources of light developed yet. Nikolai Bassov, Alexander Prokhorov and Charles Townes invented the laser in 1960 (Nobel Prize in 1964) and the first ruby laser was developed.

The first practical holography methods were developed by Yuri Denisyuk in the Soviet Union and by Emmett Leith with Juris Upatnieks in the US. Leith and Upatnieks succeed to overcome side effects (zero order and twin image) in Gabor's "in-line" holograms using an "off-axis

technique” borrowed from their work “of-side reading radar” Several types of holograms were developed at this time using different methods in holography.

Denisyuk developed white-light reflection hologram and his hologram was the first one viewable in the white-light. Leith’s and Upatnieks transmission.

Holograms were viewed illuminating them with the coherent (laser) light. First transmission holograms invented by Benton in 1968 were viewable in the white light also. (Placeholder2)
(ANDRULEVIČIUS, 2005)

Despite that the Gabor’s invention was originally dedicated to microscopy, a lot of holography applications were in different areas such as art, decorating, packaging, advertising and entertainment.

For example, Benton invented transmission rainbow holograms during his research in holographic television at Polaroid Research Laboratories.

The development of new holography methods made it important to various industrial and scientific application: printing, security and authentication, sensors, data storage, particles counting and manipulation, etc. we will focus on the development of optical holography methods and its application in security, authentication, measurements and data storage.

Basic Principles of Hologram Recording and Image

Reconstruction

For clarity of how the image in hologram is recorded and reconstructed, an example of simplified “off-axis” process for 3D transmission hologram formation is described below. Optical setup for transmission hologram recording process comprises of the source of coherent light, optical table, recording media and optical-mechanical components. Recording media should have sufficient resolution, for example the silver halide emulsion layer or photo resist layer on glass plate can be used for hologram recording process.

In Fig. 1 the principle optical scheme for transmission hologram recording and reconstruction processes is presented. Here the beam splitter 3 is used to split primary laser beam 2 in two beams: object beam 4, and reference beam 5, Object beam 4 illuminates the object 7 through the concave lenses 6. Expanded reference beam 5 is directed by mirror 9 to thin photosensitive layer 11 on the surface of glass plate 10. Light scattered from the surface of the object 7 overlaps with reference beam on the surface of the layer 11. There the pattern of interference of reference beam and scattered light is recorded for appropriate time. After developing in liquid developer, the plate is dried in air thus finishing hologram formation.

For hologram image reconstruction the similar optical setup is used (Fig. 1, b). The reference beam 5 illuminates the hologram and undergoes diffraction in recorded interference pattern in layer 11. Diffracted light creates the virtual image 12 of recorded object. The image 12 can be viewed (Fig. 1, b) at the same direction in which scattered object beam propagated towards plate during hologram recording process (Fig. 1, a). Different parts of object can be viewed at different viewing angles while changing position of the viewer creates parallax effect and a three-dimensional image is perceived.

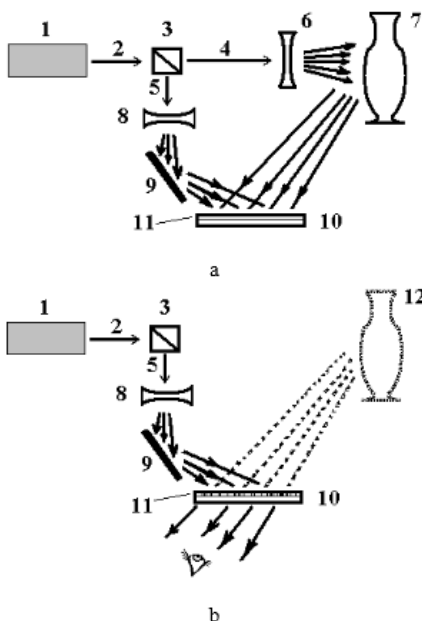


Fig 1, Optical scheme for 3D transmission hologram recording and image reconstruction process (atop side view)
a- hologram recording using split laser beam
b- image reconstruction illuminating developed hologram with reference beam (1-laser 2-primary laser beam 3- beam splitter 4- object beam 5- reference beam 6,8- concave lenses 7- object

The main disadvantage of this type of hologram is the necessity of coherent light source for hologram image reconstruction.

Various methods were developed to overcome this limitation – some of them are mentioned in the Introduction. On the other hand, the necessity of coherent source for image reconstruction is not a disadvantage in some areas of holography application, a good example for this is the holographic data storage – data recording and reading processes are realized using the same laser beam. In the following section development of the main methods and application of holography for security and authentication will be described.

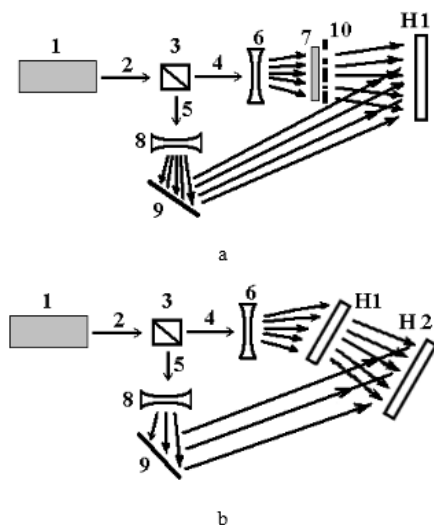


Fig 2 recording process of 2D hologram (a top side view) a-flat two dimensional object is recorded in hologram H1; is recorded in secondary hologram H2 (1- laser 2- primary laser beam 3- beam splitter 4- object beam 5- reference beam 6,8-concave lens 7- diffuser 9- mirror 10-transport 2D object, H1- primary hologram, H2- secondary hologram)

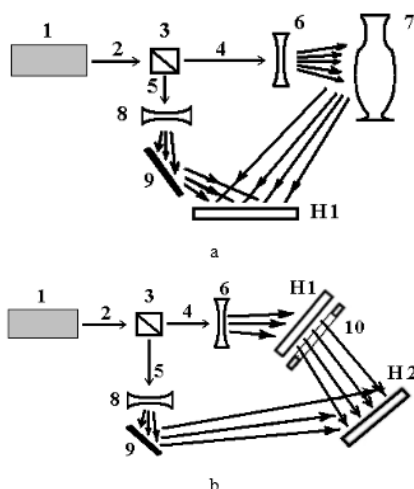


Fig 3, Transmission "rainbow" hologram (a top side view): a-an image of three dimensional object is recorded in hologram H1; b- reconstructed image of hologram H1 is recorded on hologram H2 through the narrow horizontal slit (1- laser 2- primary laser beam 3- beam splitter 4- object beam 5- reference beam 6,8 –concave lenses, 7- object 9- mirror 10- narrow horizontal slit H1 primary hologram H2- secondary hologram

External environmental shows

Previous experiences of environmental presentations:

- The full environmental artistic shows in the open air of the artist (Kribs) in which the production of lasers such as the view of Mena Polis, Bufalo Benoarléans - Philadelphia) in the 1970s.
- The shows of the German photographer (HorestBawman1976) with a great environmental project in Dusseldorf using argon and cripton laser.
- The experiments of (Daniel Karivan) with the playwright (GozifSfoboda) in Massachusetts Institute for Advanced Technology in the United States.
- Open air shows & presentations: where historic buildings are linked in a symbolic way by using the argon laser linking between the Belégéadère and the Brunelleschi Copula.
- Show in the center of Georges bemiodiou France: a synthesis of lasers and x-rays in an internal void as stairways and others.
- Shows based on digital technology; controlling the launch of laser plasma three-dimension by controlling the radiation from the laser device by the computer
- (<http://plasmascanner.lightart.com>, n.d.)
- Applications of Laser in antiquities and the museum show-1971 Geophysics Institute at the University of California has conducted a study to prove the high quality of holography. (Hamdallah)

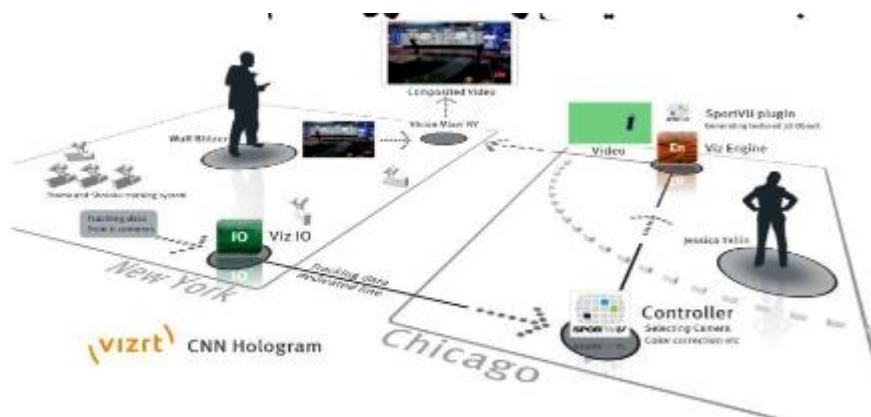


Figure 4 shows CNN holography show

Studying the problems and trying to solve them by the appropriate techniques:

Museum show for three-dimension images for the following reasons:

- 1 - The poor condition of artifacts and increasing deterioration
- 2- The nature of the historical place
- 3- Political reasons and state ownership

Environment shows:

External shows and their magnitude like:

- Abanitas Extakis.Poly Toby Green Laser Paris 1972.
- Horst Bawman Show. Dramatic Music of the Year 1977. (JFASumus, 1996)

The use of optical laser techniques, the latest surge in visual show in festivals and celebrations has been divided into two types:

Using the place as a show environment.

Using the same place in the show.

First: Making use of the place itself as an environment for show:

- Making the place an open room where the visual show is formed and the optical show is not limited to one type of technology, but multiple tools (laser – smoke – projectors)

Show in Tokyo, Japan on Odaiba Bay:

- In front of the famous rainbow bridge, presenting visual shows in the open air through the laser light, which were shed on the ice in different colors to become the background of the view displayed by projector on a cloud of smoke.
- The evolution of this show used a fountain to generate a flowing stream of water this watercolor to display the shapes of the water supply and use the bridge as a background. (Poper, 1993)

Second: Using the place itself with the show:

It differs from the previous for it depends on the laser only without any addition.

It depends on the coexistence of natural or architectural forms such as mountains, water or buildings with laser. This coexistence is a dazzling view. The original source of light does not appear in the display.

*Rocky conglomerates located under a bridge in Niagara, difficult to get rid of clusters using laser to transform the scenery to a beautiful view in July 2007. (www.Niagra-falls-Lasershow, 2007)

From the previous study and to take advantage of the previous experiences presented, as well as the historical performances and modern performances of Opera Aida in Egypt and the recurrence of their stay in the temples and pyramids as in the figures (4 & 5), notice the success of the experience in external shows in theaters and for several reasons,

The place is more convenient to view.

Increasing public interaction with the presentation and its integration in a place similar to the original presentation.

Permanent promotion of the historical places in the exhibition as well as when recorded and displayed on the media.



The repeated experiments using the above-mentioned technologies to increase the dazzling character on these presentations and hide many of the defects that cannot be dealt with on the ground and to assist the promotion of tourist attractions in Egypt, such as archaeological sites in Alexandria, which was affected by a great deal whether by drowning or by sea water Such as the Roman amphitheater, where it is already used as a theater, but with limited potential and a poor impact.



Figure6&7 Part of the concert of Tariq Al - Nasser at the Roman theater

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