The use of interactive media for cultural heritage

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Abstract:
Interactive media, that has brought new dimensions to our lives in the last ten years, has also enriched our cultural communication.

The idea of visiting museums, historical values and other cultural heritage by the help of Internet, CD-Title and interactive TV, has appeared after the Interactive media has created the cyber space concept. This paper is studying how the interactive media realizes the concept of cyber museums. The talked about research question is being answered by giving examples from Turkey and all over the World.

1. Introduction:

The multimedia started with the existence of CD-Title technique in 1990's. However, it became widespread in 1995, by the time browsers, which turned the Internet to a audio visual multimedia publication, like Netscape.

Today Multimedia publication is being used in everywhere, in all kinds of communication. Most functions like E-commerce, computer games, electronic libraries, chat lets us reach every important corner of the world, any desired information by the help of the interactive media publication presented to us by the Internet. Especially the undeveloped countries' and regions' need for information obtains an alternative solution.

It is accepted that the new media concept leads to developments in three basic topics:

1. Commerce
2. Communication
3. Education

E-commerce is a messenger for lots of changes in banking concept, shops, electronic money and shopping. Similarly the Internet is brings many changes in television news and newspapers.
The education is gaining a new dimension by the help of fast networks. Schools without libraries and far distance education are the most important changes that the Internet brought to our lives.

More specifically, this paper deals with the virtual museums that are parts of education presented by the Internet, the third topic. This paper looks for the answers for the question of "how much does the interactive media compensate the virtual museum concept".

In the first part of the paper new technologies, being developed for the virtual museums, are studied. In the second part, the changing concept of museums and virtual museum concepts are discussed. The third part evaluates how much is the virtual museum concept is being realized by giving examples from all over the world and from Turkey.

2. Interactive Media Technology

In 1985, Macintosh's icon based operation system was developed and HyperCard software was created and this supplied the first multimedia application examples. Up to 1995, within ten years, CD-Title application examples helped the important developments in both virtual and sound quality. Although the CD-Title applications presented the qualified sound and image, it was not based on a structure that could be fit to different monitor dimensions. For this reason, the studies are made for the 14" monitors and in larger monitors, the spaces are filled by black pieces. This was not an affirmative result for a generation that was brought up with televisions.

The Internet users experienced a similar problem. The computer environment's worst problem about multimedia was the vision's lack of ability to fit the screen.

Although Internet presents us a new concept like multimedia publishing, it doesn't have the image, sound and animation quality that CD-Title had. The most important problems are speed and visual publishing format that is limited by HTML. Internet did lots of things within 5 years but it hasn't reached the desired publishing quality. Because of it's format, Internet won't go much further in spite of new fast connections.

To eliminate the disadvantages listed above, alternative solutions are produced by the help of digital TV broadcasting. In this new technology called the interactive TV, TV's full screen property is combined with digital satellite and fiber optic cable opportunity.

Interactive TV aims to transfer full screen image and high quality sound, animation and image.

Interactive TV's problem is that the remote controller can't be used like keyboard without cable for navigation and e-mail. But important developments for interactive TV and multimedia are doubtless.

3. New Developing Museum Concept, Virtual Museums And Multimedia

The modern museum concept is in a very different situation in comparison with its first days. The modern museums try to educate recent and following generations with past and recent values. In this point of view, museums are education equivalent in physical space. This similarity is like encyclopedias in printed media, documentary channels in TV broadcasting. Than what can be the equivalent of museums in interactive media?

Printed Media	Encyclopedia
TV Broadcasting	Documentary Channel
Physical Space	museum
Interactive media	?

Table 1

The most important concept developed with Internet is cyber space. Virtual environment is a synthetic space that gives us the real world with 3D vision, sound and touching sense.

Parallel with recent development in the computer technology, the technique called virtual reality (VR) promises the viewer the opportunity to observe the historical building in a way, which is very similar to, but it is not constrained as, the real-world of the building.

Conventionally, computer graphics appear as hard copy on an A4 page, or as a display on 30 cm. raster screen. In virtual reality systems, the user (or 'traveler') has the experience of being within the 3D data-set (commonly known as 'cyberspace').

Additionally, the system may provide the means by which the traveler can move through cyberspace and the mechanisms for simulating physical interactions with virtual objects within the data-set.
The basic elements of the hardware of VR systems (apart from a powerful processor) are typically [Tollander91]:

- a helmet with earphones and 'eyephones', i.e. two small display screens one in front of each eye: 6D sensors allow tracking of head position and attitude which in turn determines the stereo images transmitted to the eyephones. Thus, as a user looks around, the stereoscopic image changes in a way, which is similar to that which would be experienced if the user were actually 'inside' the data-set.

- a data-glove: 6D sensors allow tracking of the position of the hand and of individual fingers; pneumatic pads may be incorporated to allow sensory feedback as the user's hand, within the glove, closes on a virtual object within the data-set. Thus the user is given the tactile (and visual) experience of interacting physically with his/her environment.

- a motion platform: some physical prop such as a treadmill, stationary bicycle or car steering wheel and foot pedals which translate the action of the user and move him/her through cyberspace. In the absence of such props particular hand gestures, such as pointing, can be translated through the glove, and programmed to move the user forward in a particular direction.

Because the virtual reality technique is very complex and the user needs to wear some machines to the body, easier solutions are used. In such system, there is only one motion platform and a large screen, which is able to provide third dimensional space feeling. These solutions are used in spaces with dimensions of 10x10 m^2. One 6 meter wide and one 2 meter wide monitor are placed in two perpendicular walls of the space.

In the middle of the room there is a turning chair with the space mouse that controls the computer model.

The user sitting on this chair can travel in a texture of a city by moving the ‘space mouse’. [Crossing95]

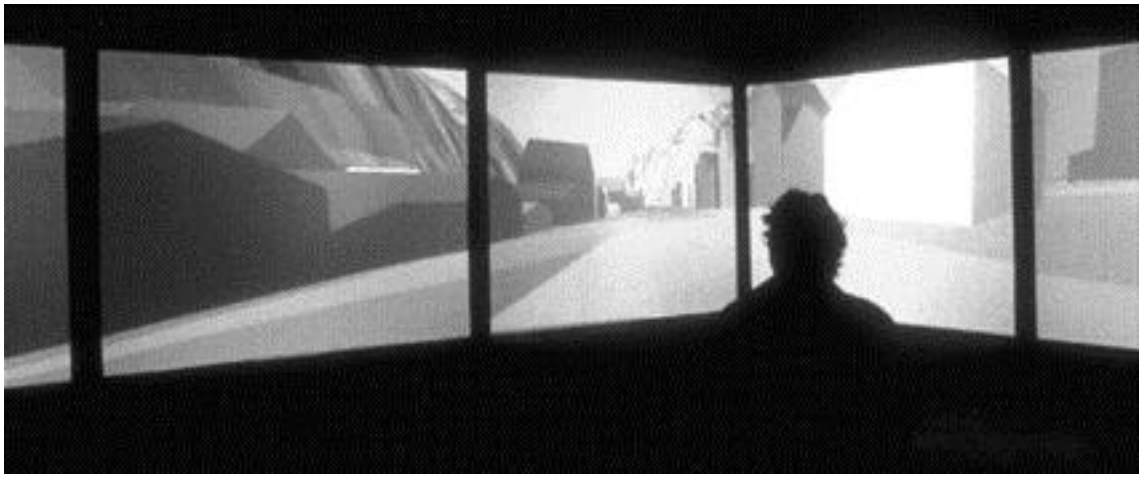


Figure 1- Crossing Project, University of Toronto,

All of these studies are solutions for the three dimensioned space to be perceived. Virtuality on internet is physcologic subject**.** To the contrary, Internet is based on two dimensions. We can see that this does not fit the museum concept expressed above although it creates a visual and aurol virtuality in communication.

4. Electronic museum around the world

Worldwide efforts in this area can be categorized into three main branches:

1. Information on a physical museum:

These applications are fundamentally based on web-based brochures. Besides general and contact information about the museum, some or all of the collection of the museum is published on the web. But, instead of being a spatial trip, this is nothing more than publishing these elements on the web environment. Hence, these sites are regarded as “web brochures”. Today, close to one thousand museums publish their pieces and establishments over the Internet [Yahoo].

2. Solely-Internet based compositions founded over a thematic concept:

These are sites that are founded around a thematic concept and that are named as “museums”. On these sites, it is possible to take an interactive tour of, for

instance, history of information technology. These sites are usually aimed at informative purposes. [VMOC 00]

3. Virtual museums approaching the “virtual reality” technique and concept:

On these sites, a system that makes it possible to travel in a 3-D environment is set up. During this travel, the user can view a piece created in real life, or one that’s created solely in the computer environment, or one that’s impossible to view in a physical environment. This computer model can be designed as an exact replica of a physical museum or as a totally original design. Created as more than a technological attraction, these sites are aimed to function as virtual architectural pieces, or to convey virtual topics with the help of computers. The most important production in this area is the Guggenheim Virtual Museum. [GUGGENHEIM 00]

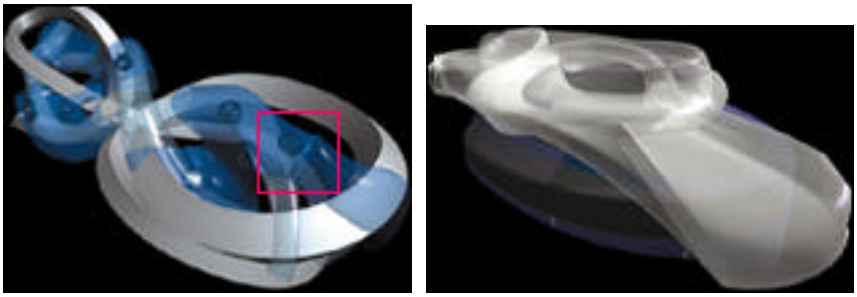


Figure2- The Galleries area of Guggenheim Virtual Museum contains electronic exhibition space and artist’s work. Designed by Hani Rashid and Lise Anne Couture, Asymptote Architects, New York

The first phase of the Guggenheim Virtual Museum will be launched at early 2000 as part of a three-year initiative to construct an entirely new museum facility. The structure will be an ongoing work in process, with new sections added as older sections are renovated. The project will consist of navigable three-dimensional spatial entities accessible on the Internet as well as real-time interactive components installed at the various Guggenheim locations.

4. Applications in Turkey:

The first developments in the field of virtual museum coincide with 1990. The purpose of the first try realized for the Topkapi Palace was to access many visual and written materials within the cyberspace, to compare and to obtain new visual

and written versions of those materials by some composing process. In the Topkapi Palace Project, the basic aim was to make a sophisticated interface design in order to access easily to contrasting materials such as photographs, engravings, orthographic drawings, animations etc., within the advantages of the interactive computer environment. However, since the necessary sponsorship was not found, this multimedia system was not finalized and remained only as a CD–title of 20 photographs and 10 technical drawings [OZCAN93].

Figure 3- Screen view from Topkapi Palace Project

From this project of The Topkapi Palace on to 1995, another important project was not accomplished. The start of the use of internet in Turkey (in 1993) and its effect in multimedia of visual and written material was used in web museum for the first art museum, Istanbul Museum of Painting and Sculpture (IMPS), founded in 1937 upon the order of Ataturk [OZCAN 95]This actually coincides with on of the first important virtual site of the world, WebMuseum Project created by École Polytechnique in Paris. In the project of IMPS, 269 paintings in picture format (JPEG), 16 sculptures in interactive panorama format (QuickTime VR) were opened to Internet users. In this period, very few museums around the world were exhibiting sculptures within QuickTime VR format. In the IMPS projects, it was also researched how to exhibit the information about a museum in an Internet environment, in the most effective way, along with the presenting Istanbul Museum of Painting and Sculptures to the world users. For this purpose, different documentation and information design models were studied and finally, the Dewey Classification Standard were decided on as a most suitable system for especially academic use. This classification system did not satisfy the general Internet users, although it had provided an easy access under search of title, subject and artists. The IMPS project should be considered the first web site created by professional graphic and multimedia designer in the history of Turkish Multimedia Design.

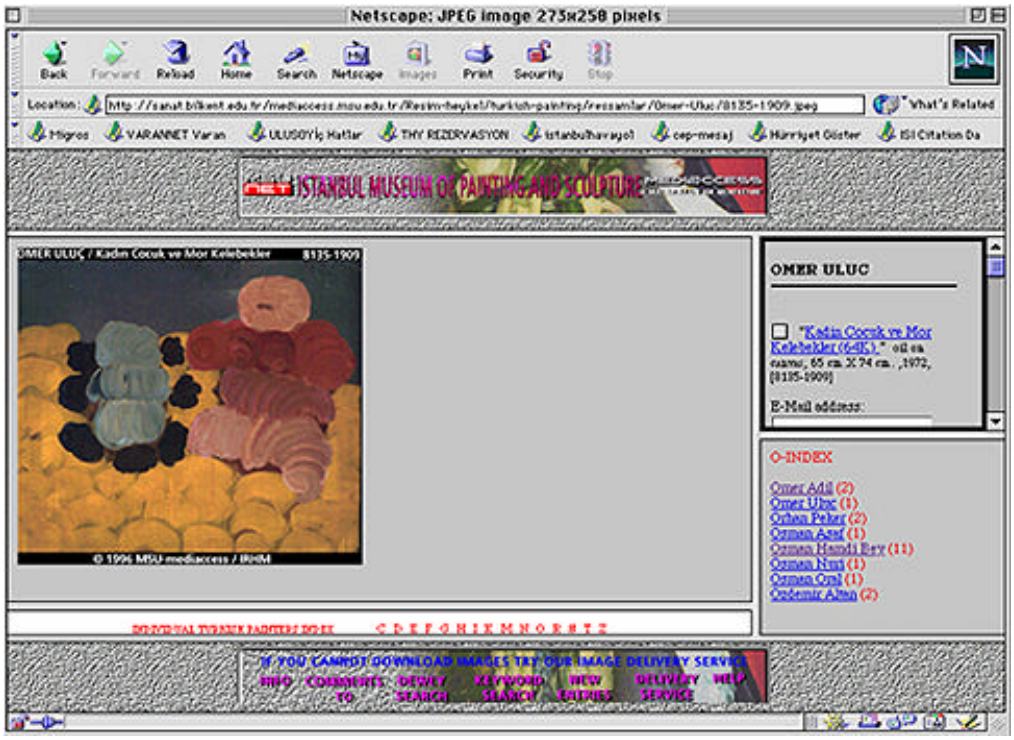


Figure 4- Screen View From Istanbul Museum of Painting and Sculpture (1995)

The Internet version of Istanbul Museum of Painting and Sculpture received a lot of interest both by the communication designer and Turkish Public. It led the way in the art targeted multimedia projects and professional web site design in Turkey. Within this period, the CD of Habitat in Anatolia, from the Past to Present within the 2nd International Habitat Conference [HIZARCI95]; 100 Famous Turkish Film CD within the celebration of 100th year of World Cinema, Turkish Painting CD and Turkish Poetry CD become the leading works in both interface design and content.

The Istanbul Museum of Painting and Sculpture Project was a research project realized within the structure of Mimar Sinan University, Istanbul, as it was the first Turkish Web Museum. None of the Turkish Museum had realized such a project until than.
A collection of painting and sculpture, belonging to Sakıp Sabanci, the director of The Board of Sabanci Holding which is one of the biggest company of Turkey, carries the characteristic to be the first private art collection in the internet [DERMAN96] Internet version of Sabanci Painting and Sculpture can be considered a web brochure of the book with the same name. Although it is simple interface design, it has received a lot of hits and favorable reviews. In the same way, two private museums Rahmi Koc [RAHMI] and Sadberk Hanim of Koc

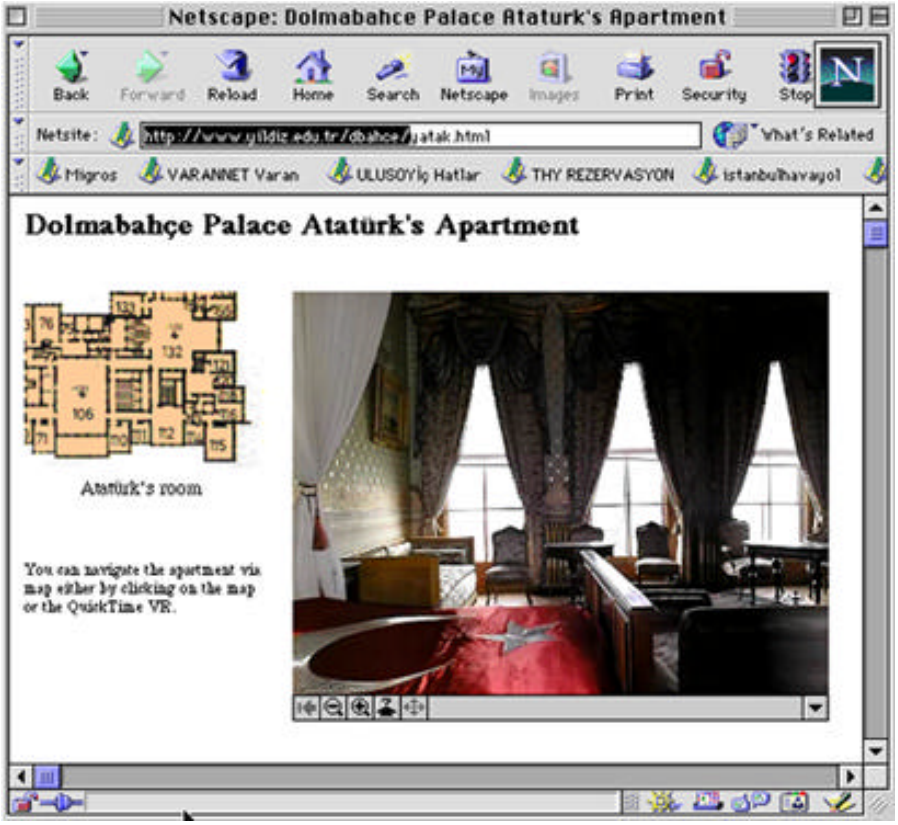
Holding [SADBERK], one of the largest holdings was reached on Internet, in 1997.

In the same year, some Turkish Art Galleries started to show interest in Internet. For the same purpose, Borusan Culture and Art Center started to display and archived every exhibition shown in the actual space, on the Internet [BORUSAN]. Thus, the researchers could access The Turkish Artists Work of the last decade on Internet.

1997 has been a productive year for the Turkish Virtual Museums. In this context, intensive studies were realized on database that could be accessed via Internet. The TAY database is the most extensive one, which is developing since 1993 and which is connected to internet in 1997. This database display about 2000 artifacts found in all Turkish Archeological Sites, within the format of two and three dimension. The user can search the artifacts depending to title, type, period and place [TANINDI99].
The turn of web brochure to real meaning of virtual museums came about with the aid of tools which is easy to produce Interactive Panorama technique such as QTVR Authoring tool. Turkish museums also used the new developments immediately. Yildiz Technical University,

The Department of Multimedia Design and the Department of Museum Studies have initiated the studies that made it possible to see Harem Rooms in The Topkapi Palace [OZCAN98b], Ataturk's Room in Dolmabahce [OZCAN98a], palace and Rahmi Koc Museum in QTVR format via Internet.

Figure 5- Screen View from Dolmabahce Palace Ataturk's Room (1998).



The above-mentioned virtual museums' interface design incorporated the museum orthographic drawings and interactive panoramas. The user, as a result, could walk through the museum easily by clicking plan, section or elevation as well as on interactive panorama.

The same team, towards the end of 1998, starting off the hypothesis that a concept of virtual museum does not need to be associated with physical space, created Interactive Museum of Turkey (IMOT) on the net [IMOT98]. The project whose real purpose was to introduce Turkish Art and Culture within a historical process set up virtual galleries, electronic libraries with original reference articles and published daily news about Turkish art. The project that received the support of many private cooperation and media was shown interest by the public and academicians. In this project, Anatolian Civilization Exhibition, Contemporary Turkish Artist Exhibition and Turkish Photography Exhibition were displayed on Internet a long with 50 articles.

The last example of these studies is Interactive Museum of Eczacıbaşı. [ECZACI 00] A real virtual museum, that owned Eczacıbaşı collection and examples of paintings of some Turkish Artists, was formed supported by electronic forums and news about education and arts. This is very important for Turkish Multimedia History. And it is a step that will fill cavities in arts and culture.

6. Conclusion

After the arguments and researches above, let's return to our question:
"How much is the virtual museum concept is being carried out by interactive media?"

To answer this question, it must be remembered that media is a two dimensional concept now.

Interactive media presents us a better medium by using image added to sound. Chat rooms bring a social dimension to this communication that helps more people to meet. But interactive media is a virtual environment just like telephones. Before media becomes a 3D environment, cyber space is just a dream for interactive media.

When we look back to the comparison in Table 1, (on condition that 3D VR techniques aren't taken into consideration) the equality of museums in interactive media, can be the resultant of interactive encyclopedias and documentary TV

channels. It is obvious that in two-dimensional interactive media, virtual museum is an abstract concept.

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