Fact, Fiction, Fantasy:
The Information Impact of Virtual Heritage

Professor Hal Thwaites
Concordia University
Department of Communication Studies
7141 Sherbrooke St. West
Montreal, Quebec, Canada H4B 1R6
(514) 848-2539 <Hal@Vax2.Concordia.ca>

Abstract

Current research into the representation of cultural heritage (historical/cultural content) via the technology of virtual reality and multimedia is rapidly progressing worldwide. At this juncture in time technological tools and urgency to preserve heritage content and sites have collided to push this field forward. What impact will it have? This paper discusses the information impact of Virtual Heritage (VH) on culturally different mass audiences. The emphasis of this research is placed on the users, the receivers, of Virtual Heritage content; what is happening to the person who perceives such information in a real 3D space like a landscape, or in a confined space, or in a substituted space (museum, exhibition gallery, virtual reality, multimedia document, website) and the resulting feedback of this information which plays a role in the user's mind. A classification of themes is presented vis-à-vis cultural groups and the notion of "eternal themes" is introduced. The impact of form and content of VH projects is discussed as possible positive or negative interventions. The process of cultural reconfiguration, representation and warping are introduced. This paper presents a preliminary analysis for a more extensive study on the impact of the information design and content of mediated Virtual Heritage.

1. Introduction

In his recent novel Timeline, Michael Crichton [1] describes a future where time travel to the past is a reality and entertainment IS the past. He raises some excellent questions.

> "At the end of the 20th Century, the artifice of entertainment, constant, ceaseless entertainment, has driven people to seek authenticity. Authenticity will become the buzzword of the 21st century. How do we define authentic? It is that which is not controlled by corporations, entertainment mega-conglomerates and media moguls. It that which is not devised and structured to make a profit. It is anything that exists for its own sake, and that assumes its own shape. What is the most authentic of all? The past.
>
> So what is it about history that is so appealing? History is the most powerful intellectual tool society possesses. History is not a dispassionate record of dead events, places and people. The purpose of history is to explain the present, to tell us why the world around us is the way it is. History tells us what is important in our world and how it came to be. It tells us why things we value are the things we should value and what is to be ignored or discarded."

Proceedings of the Seventh International Conference on Virtual Systems and Multimedia (VSMM'01)
0-7695-1402-2/01 $17.00 © 2001 IEEE

"Virtual Heritage is the utilisation of technology for interpretation, conservation and preservation of Natural, Cultural and World Heritage." [2]

It is the year 2001 and we as researchers and media creators are fascinated with exactly what Crichton describes for us. What impact will our research and production of Virtual Heritage (VH) and Multimedia cultural representations have on our audiences? How will we use VH? We do not yet know. However, as we research, create and present these virtual heritage multimedia datacubes [3], we provide the receiver/visitor/audience with a representation of reality which elicits a certain information impact based in fact and fiction, while stirring that fleeting notion of fantasy, time-travel. These three qualities are what make Virtual Heritage so intriguing to the twenty-first century audience.

2. So why now?

Cybernetists and biocybernetists understand the concept of information in the systemic form of an information chain. Cultural artifacts are viewed as information complexes, encompassing not only the information source, but also the environment in which this source is situated and the audience, the receivers, who are experiencing the information, processing it and storing it in their brains. This process is called an information chain [4].

Many centuries have taught artists to harness effective cultural stimuli from embellished words to carefully composed images, to create great information complexes of which understanding was facilitated by a number of sentic contents, or so called eternal themes. The contents and the themes themselves had great value. From ancient to contemporary society they represented various sets of morals, values, stereotypes and archetypes, and many times the information user was drawn into the artwork. The container of the content, supposed to be transparent and invisible, was left to only the artist-himself and educated critic to recognize.

The audiences of the information society are following the path of their elders, but with different phase shifts of time and space - all warped by the digital/analog mind, the electronic environment and a hierarchy of values depending heavily on the non-organic technologic speed of information processing.

Researchers and media creators now have access to unprecedented technological tools and a wide range of affordable virtual reality hardware and software. The Internet and the World Wide Web have reached a wide level of penetration into both peoples' homes and into educational institutions and cultural organizations. There has been a renewed and increased interest in World Heritage, mostly due to the UNESCO initiative establishing the World Heritage list of sites. An increasing global sense of community and a decreasing access to heritage sites due to deterioration caused by "over-visiting" has raised an alarm to protect them. And finally, the development of mass tourism has spurred an interest in the emerging field of virtual travel. From the early 1990's researchers have worked to represent cultural heritage sites through VR and multimedia. Every year the number and forms of these VH representations has increased.

3. Reconfiguring culture

What we are doing by creating digital mediated representations of cultural heritage sites and artifacts is creating a shift towards virtuality and interactivity, both of which originate in abstraction. There has been a rapid shift to the digital realm. Whereby analogue seeks to transcribe, digital seeks to convert. The analogue media of the past store cultural information in the material deposition of concrete objects. Digital media store it as formal relationships in abstract structures. With the ability to model an environment mathematically, abstract coordinate space becomes object space and the computed information becomes the image space. [5]

Proceedings of the Seventh International Conference on Virtual Systems and Multimedia (VSMM'01)
0-7695-1402-2/01 $17.00 © 2001 IEEE

Our dealings with reality itself are becoming increasingly mediated by interfaces to computation [6]. Digital media continue a tradition of surrogate reality inaugurated with the camera. The computer adds two new twists; the reality behind the picture may be virtual and it can interact. Exploring virtual heritage simulations will teach us a great deal about what reality is or was, while dramatically changing the reality in which we live. Virtual reality raises the issue pointed to by John Searle in 1992 [7]. Simulating something is not always enough to make it the real thing. In addition, how complete does a simulation have to be before it is real? As we create our virtual heritage datacubes, we will force a dramatic challenge to our media-based culture as we try to comprehend the paradoxes of interacting with virtual entities through their computed visages. Figure 1 below summarizes this process.

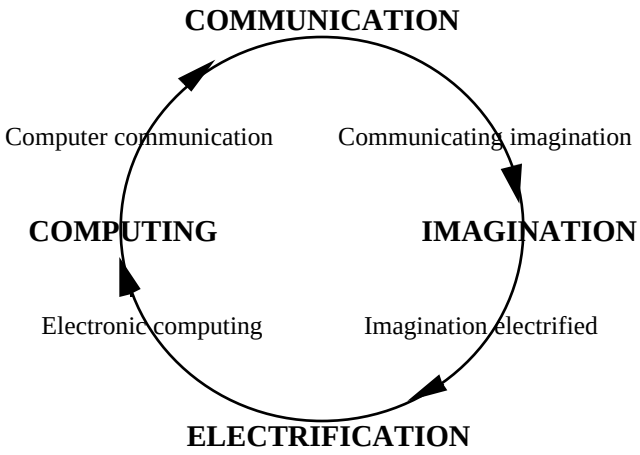

Figure 1. Circle of communication [8].

It is now apparent that we have come full circle, back into an era where we seek to communicate the imagination. That's what cyberspace and certainly virtual heritage is all about. Capturing the imagination, with the past and the present. In order to make computers clear to our minds, we have to teach them to speak to out hearts. Drama, music and architecture (the shape of a place) all have important places in computing.[8]

Virtual heritage incorporates fact (architectural plans, scans of artifacts or sites, photos of locations), fiction (re-creations of landscapes, people, building adornments etc.) and fantasy in varying forms and degrees. The element of fantasy is perhaps the strongest to appeal to the imagination of the viewer/visitor on certain levels. It may ultimately be the key to the widespread appeal of virtual heritage as a public experience and help the goals of many projects succeed.

4. The notion of "eternal themes"

From the beginning of literature and the visual arts there has been a consensus among media artists, that some contents are more, and others less effective with various audiences. The notion of "eternal themes" occupied the work of many critics and artists alike. Some psychologists established a classification of "instincts proper" or "general instinctive tendencies", under which the majority of human behavior could be thematically grouped. Manfred Clynes [9] brought a new aspect to the thematic grouping with his theory of "sentics".

There are roughly three distinctive groups of human activities, from which an information impact can arise: 1.Egotropic group, where basic personal human needs are

expressed; 2. Egosentic group, where most basic emotional states of mind are expressed, and 3. Egospatial group, where most environmental and social needs are central. Each different culture may have a different classification or priority within the "eternal themes grouping", but most researchers more or less agree with these three major groups and find in each group several examples of values agreeable to them.

The stimulation of the information consumer, via thematic aspects of a media piece does not progress in distinctive steps, but in an uninterrupted flow even if the receiver of the information is not "inputting", reading or viewing and only daydreams or plays with the thematic stimuli. The modularization of artistic information is rising in importance within the 21st century, facilitated by the rapid speed of images, sounds and media works, perceived by enthusiastic "information grazers". These modules of information, are perceived and stored as units and are generally retrievable from human memory, but not in great detail.

On the other hand, if an artistic work lacks a strong semantic content, the viewer may actively turn their attention to the formal, stylistic details and hungrily consume them in the same fashion. So in this way, in the modern art world, the theme may replace the form and form may replace the content for the information consumer.

The classification of themes has another more remote sense. As the information consumer files the various experiences according to themes or contents, the retrieval part of the information chain may combine several experiences together, expressed more as a feeling, inclination, and attitude, toward a certain theme. This state of mind can greatly facilitate new information input, amplify an idea or a theme. This process is responsible for much of what we call the "the taste of an audience".

4.1. Multilayer thematic information delivery; mimesis of life

A common way for an artist or media creator to convey a certain story, idea, or content is to imitate or describe a certain situation in life or society, heroes and heroines, events, advantages or disadvantages, which happen in either real-time or are restricted or prolonged over time. All these "stories" are in a basic sense the subjects existing in the mimesis of life. What differentiates them from real life is not their closeness or remoteness to the cultural or intellectual level of the receiver, but the relative freedom with which the receiver can play, daydream or think in endless variants. In real life, the events pass around us with a certain one-way direction, which cannot or is usually not interchangeable.

Once an event has happened, it cannot be undone or changed according to our wishes. But in a VH work the sheer opposite is possible or even desirable. The event can be turned around not only in the media piece, but it can be endlessly replayed in the viewer's head: forwards, backwards, sideways - and in any real, daydreamed or night dreamed state of mind. The result of such freedom of mind is a centuries old hunger for artistic mimesis of life - in literature, theatre, movies or television program and now within virtual heritage multimedia representations.

The apparent power of the artistic mimesis of life stems from a multilayer information delivery. Different cultures and different nations may have different scales of subjective values or preferences. Once an artist has embarked on the mimetic information skeleton, they start to describe the persons, events, situations and environment in a human fashion - "through human eyes". The consumer of the information, starts their own similar decoding patterns within his/her recall imparting a great impact on a virtual heritage piece.

A multilayered information delivery scheme has another very important effect on the information consumer: it facilitates a number of "missing connections" in the basic information design. Since the receiver is following the "path of life experiences", they fill in the voids of the mediated reality with their own imagination with great ease and efficiency. They can fantasize. In a fragment of time the viewer can cross centuries,

distances, social groups, peek into the private lives of many other characters and "survive" imaginary wars, crashes, battles, and scandals. Virtual heritage can easily incorporate many of these aspects by the very nature of the content and the technology.

The human brain has a remarkable ability vis-à-vis multilayered information delivery. It can process incoming information in two modes: 1. In a sequential mode: respecting the time flow of events, characters, books, and films and in 2. Spatial mode: reflecting the incoming information on their own experiential mindscape. Although each mode evokes activity in a specific brain hemisphere; (sequential processing: left brain hemisphere; spatial processing: right brain hemisphere) the whole brain is processing information in a parallel fashion. This ability gives the viewer an opportunity to move forward in the information flow and adjust it according to their own cultural and intellectual experiences. This is why the addition of interactivity in virtual heritage is so compelling to the user.

The mimesis of life from an artistic work can have endless steps of understanding and adjustments along the original story and content. Of course here cultural, racial and national differences play the most important role.

Finally, the mimesis of life gives the information consumer a value of satisfaction from understanding, belonging to the same human species, the necessity to live with beloved heroes and models, and accounts for a powerful psycho dramatic effect of artistic works.

5. Human values in Virtual Heritage content

Each society has its own hierarchy of values stemming from its geographic location, interior and exterior social relationships with other human groups, and from own its social structure. These values are often taken by artists and used as literary subjects, contents of books, films, television programs, poems, etc.

The distance or closeness of content to a particular hierarchy of human values label the artistic work as "national", "tribal", "own" work, and as such, it cooperates in the establishing the information consumer's attitude toward any media piece.

In the very distant past, artistic works were intended for a specific audience (one's own tribe, own nation). The verbalization of content narrowed this aspect to only those understanding the specific language. From medieval time onward the aspect of cross-cultural understanding and cross-cultural communication rapidly extended the information impact of artistic works globally. Marshall McLuhan's vision of the "global village" [10] has a strong cultural connotation here. As we closed the 20th century artistic works were increasingly perceived by readers and viewers from many nations and by ethnic and ethno cultural entities. A specific trait emerged during the 20th century. Media receivers were metaphysically entering and changing the contents of artistic work to an extent never imagined by authors and artists before.

Human values are usually joined in hierarchies, and the expression of them in human behavior is perceivable as "value stereotypes" and "value archetypes". For easier orientation among ideas, values, and thoughts people have developed a defending strategy, which places the incoming content into one or more categories according to the hierarchy of their personal values. When a thought or idea is repeatedly processed along the same established pattern - a person is thinking in his own "stereotype".

There are a number of human values, which traditionally cut across cultural and national boundaries. Certain religious, political and humanistic values are of this nature. Those closest to the sentic human values will transfer across geographical, national or political boundaries easily (survival, home making, love, motherhood, jealousy, hate) and those, which are geographically or nationally specific, are usually perceived as "exotic", "strange".

Therefore, human values are a key aspect of virtual heritage content that has an enormous potential impact on people when works are made available through cross-cultural media interfaces and globally available technology.

6. Content and form in the "mindscape" of the information consumer

Each media information complex undergoes substantial transformation when entering the domain of the human brain. Not only are the original shape, form and content subtly or substantially changed, but also the receiver's own experiences, combinations and dreams enrich the original content. What we are looking at is not the original stimuli but a whole mindscape of thoughts, recalls, memories, projected, or fantastic dreams. It would not be far from the truth to relate the effect of a virtual heritage subject and its media or visualized form to the effect of the wind on the sea, causing waves in many directions, many shapes, forms and unseen underwater movements.

Something very important in the world of art happened at the end of 20th century. The time and space axes of information are warping the content and form of an artistic piece - in the mindscape of information consumer (see figure 2). No longer does the designer of a media piece have the sole power to grip their audiences. The perceiver of an artistic work is more and more freed from the conventions of audio-visual form. These start to move freely within his/her imagination due to the awesome capacity of human brain to combine the carefully designed elements of subjects, contents, and forms into a most fantastic and invisible pattern of thoughts, dreams, and imaginations.

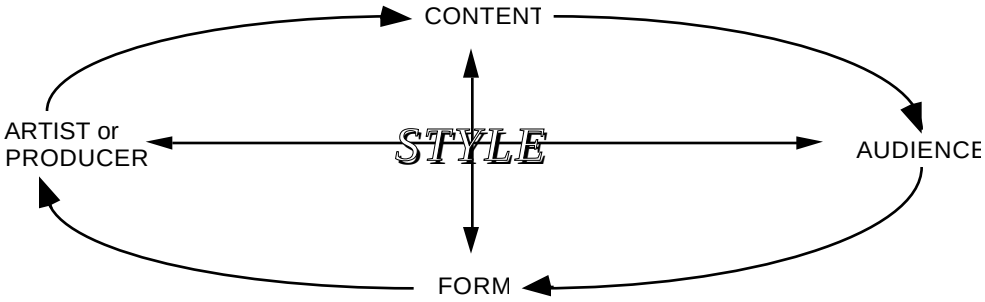

Figure 2. Interactions of Style, Form and Content [11]

Culture, our understanding and definition of it, is a vast and complicated human quality evolved through the centuries and manifested in languages, arts, architecture, writings, drama, etc. Virtual Heritage representations of reality, either past or present, that by their nature embody culture, are currently tied to certain technological "flavors". For example: high-level supercomputer images, immersive 3D environments, distributed world-wide-web sites and stand-alone multimedia installations, among others. All of them can vary greatly in the presentation form and style of information.

Delivery of virtual heritage content via Internet websites, a popular technology, can now provide only certain kinds of information. QTVR interactions, texts, images, databases and avatars are common. CD ROM, or DVD delivery by nature of their high-density, can take content further in scale and scope. Stand-alone, immersive delivery platforms can provide the more "true virtual" experience that is the seeming holy-grail of virtual heritage, but they are often costly and limited to specific venues. Examples such as; Amiens Cathedral, St. Andrews Scotland, Virtual Notre Dame, Stonehenge, Virtual Quebec, Virtual Florida Everglades, Shirakawa-Go, and the Lascaux Caves (to name but a few well known) all illustrate the above to various degrees. No two are alike or do they present content in the same style or form. Thus the resulting information impact on the audience/receiver is altered in each case and must be considered carefully in the design.

7. Interventions in information impact

The beginning of the twenty-first century is a significant time and place in history. It marks the coming together of technology and human will/needs in order to preserve the world cultural heritage in its many forms. It is also inspired by the interest and support of UNESCO to virtualize endangered heritage sites. However, what positive and negative impacts will these interventions have on our perception and understanding of heritage into the future? Listed below are some of the possible implications of this process that of course will shift in importance and scope over time and as technology develops further.

Positive Impacts:

+ increased interest in cultural world heritage,
+ accessibility to remote or closed heritage sites,
+ provide a wide variety of rich information sources,
+ increased awareness of global humanity,
+ encourage virtual tourism over mass tourism,
+ provide a means of recording, preserving, interpreting and educating,
+ widespread cross-cultural and inter-cultural communication,
+ fulfill our "fantasy" of time-travel into the past.

Negative Impacts:

- technologically intense and expensive to develop and present,
- technologically exclusive,
- provide a limited perception of the overall "cultural value" of a site,
- can have certain ellipses in cultural information,
- diversity in the amount and accuracy of the information available,
- risk of commercialism and low quality applications,
- audience exposure to formative experiences,
- require custodial care and maintenance as VH technology evolves.

8. Conclusion

From the forgoing discussion it is clear that Virtual Heritage is a very young and rapidly evolving field. Many dedicated researchers and media artists are working around the world to find ways to "virtualize" our global cultural heritage sites and artifacts before they disappear forever. Thousands of people, the media consumers or the 21st century anxiously await the results of our efforts. Technology advances faster than we can sometimes keep up. This is a double-edged sword, on one side providing us with the tools to create ever more engaging representations, while on the other it creates challenges for the exhibition, access and preservation of VH works.

So what now? How do we proceed so that the best of Virtual Heritage can make its way to the public eye given all of the constraints and considerations outlined in this paper. The engineers, historians, architects, virtual media creators and artists must find new and useful ways to expand their work, share approaches and learn from each other. In my opinion, very few projects should be carried out in isolation, one specialized team working without the help or input from other disciplines. Virtual heritage is a multi-disciplinary endeavor that can only succeed through the meeting of minds and sharing of ideas and research.

The Virtual Heritage Network provides us with a database and clearing-house of great benefit. Joint projects, or at least consultations on projects must continue to evolve. In the near future some critical issues will need to be addressed; accessibility to heritage data, H/C interface design for widespread public use, the formalization of the VH database, establishment of a global infrastructure (UNESCO), archival standards for VH work and, the technological history transfer of data so that VH projects will not be lost.

This paper is a preliminary discussion and a departure point for a study of the "Information Impact of Virtual Heritage" which is supported by the 3Dmt Center and the Hexagram Institute at Concordia University, in Montreal, Canada. What I propose, with the help of the VH community and researchers who have projects ready now, is to collect a variety of examples that will be used in an audience assessment study. If you are interested in being part of the study by submitting your work as test material, please contact me.

"We shape the destiny of the future with our stories about the past by the effects of our imperfect presentations on the enthusiastic minds of the public". [12]

9. References

[1] Crighton, Michael, Timeline, Alfred A. Knoph, New York, 1999.
[2] Stone, Robert, Virtual Heritage. UNESCO's World Heritage Magazine, November issue. 1999.
[3] Thwaites, H.& Malik, M., "Communication Analysis: A Protocol for Virtual World Heritage Creation",. FutureFusion Application Realities for the Virtual Age; Ohmsha/ISO Press, Tokyo, Japan. Volume 1; pp. 256-261, 1998.
[4] Malik, M.F. & Thwaites, H.M., "Aesthetical Information Impact of Spatial Information Complexes" Montreal, Canada: Concordia University, 1990.
[5] Hayward, Philip and Wollen, Tana. Future Visions. New Technologies of the Screen. BFI, London. 1993.
[6] Gelerntner, David, Mirror Worlds, Oxford University Press. 1992.
[7] Searle, J., Churchland, P,M, and Churchland, P.S. "Artificial Intelligence: A Debate", Scientific American, Vol. 262, no.1, 1992.
[8] Pesce, Mark , VRML Browsing and building cyberspace, New Riders Publishing, New York, 1995.
[9] Clynes, M., "Sentics: Biocybernetics of emotion communication," Annals, New York Academy of Sciences 220, 3, pp.55-131, 1973.
[10] McLuhan, M. Powers, Bruce. The Global Village, Oxford University Press, 1989.
[11] Dondis, Donis A. A Primer of Visual Literacy. MIT Press. 1973.
[12] Britton, B.J. Making History: The Art of Science, Presentation given at the Union of Prehistoric and Protohistoric Scientists, Forli, Italy; September, 1996.

WWW Resources and examples.

World Heritage List - http://www.unesco.org/whc/heritage.htm

Virtual Heritage Network - http://www.virtualheritage.net

Virtual Tours UNESCO - http://www.unesco.org/whc/nwhc/pages/sites/main.htm

Amiens Cathedral Project - http://www.mcah.columbia.edu/Amiens.html

Notre Dame Cathedral - http://www.vrndproject.com/

Ancient City of Ayutthaya - http://www.sli.unimelb.edu.au/~cliff/virtual.htm

Cleeve Abbey - http://www.virtex.co.uk/nabbey.htm

Virtual Stonehenge and Virtual Lowry - http://www.vrweb.com

Dudley Castle - http://www.imint.freeserve.co.uk/dudley.htm

Saint Andrews, Scotland - http://www.saint-andrews.co.uk/

Greek Cultural Heritage - www.culture.gr/

Tajmahal - www.taj-mahal.net/