The Role of Digital Technologies in the Preservation of Cultural Heritage

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This paper considers the advantages and disadvantages of digital technologies in the field of preservation of cultural heritage. The methods of creating of virtual cultural storages do not always allow to preserve the true reflection of memory, history and tradition the same way a real museum does and consequently, the axiological meaning of the term heritage is lost. In contrast, virtual museums and digital reconstructions of cultural artefacts help to protect and preserve information which otherwise would be lost. In this paper, we analyze the properties of virtual forms of cultural heritage preservations in the context of interaction between contemporary society and cultural tradition.

Key words: digital technologies, cultural heritage, virtual reconstruction, communication, virtual museum

Introduction

The meaning of virtual technologies in the area of preservation of cultural heritage, and more specifically, of museum heritage, is widely discussed by the scientific community.[1] Advantages and contradictions of virtual methods of preservation of cultural heritage are considered by researchers in the fields of cultural studies, museum studies, psychologists, who study the forms of perception, art historians, etc. In 2003, the session of UNESCO adopted a Charter on the preservation of digital heritage. Art galleries and museums in the late twentieth century began

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[1] See for example, CAMERON, Fiona and KENDERDINE, Sarah. *Theorizing Digital Cultural Heritage: A Critical Discourse (Media in Transition)*. Cambridge, MA: The MIT Press, 2007; KALAY, Yehuda, KVAN, Thomas and AFFLECK, Janice (eds). *New heritage: New media and cultural heritage*. London: Routledge, 2007; LYNCH, Clifford. Digital collections, digital libraries & the digitization of cultural heritage information. In: *Microform & imaging review,* 31(4), 2002, pp. 131-145; STANCO, Filippo, BATTIATO, Sebastiano and GALLO, Giovanni (eds). *Digital imaging for cultural heritage preservation: Analysis, restoration, and reconstruction of ancient artworks*. Florence, KY: CRC Press / Taylor & Francis USA, 2011; YILMAZ, Haci Murat, et al. Importance of digital close-range photogrammetry in documentation of cultural heritage. In: *Journal of Cultural Heritage,* 8(4), 2007, pp. 428-433.

to transfer to electronic copies works of art stored by them. As a result, every major museum now has its own e-portal or a virtual museum in addition to the main exposition. Many benefits of new technologies is pointless to deny, but it is important to analyze the content of sites of museums and galleries in the context of perception of new information objects, because mass culture and Internet-compilation of masterpieces blur the boundaries between genuine art and its electronic reproduction. Therefore, cultural communication, based on a genuine sense, is no longer created. At the same time, the formation of personality and its metaphysical needs remain the same today, as before, as well as the task of the real sphere of human existence (education and upbringing). The context of tradition and heritage means a lot in these fields of human existence. But the very meaning of heritages changes: "Gradually the concept of heritage includes a wide range of material objects, the phenomena of nature, as well as non-material forms of culture (for example, information technology), reflecting different aspects of relationship between a man and the nature, global and regional trends in development, etc".[2] We may state that the role of cultural heritage in the upbringing and education of a modern man disappears and fades into the background, under the pressure of the flow of information.

The main forms of digital cultural heritage preservation

Experts determine two directions in the use of electronic technologies in the sphere of preservation of cultural heritage:

a) e-form (electronic copies) of traditional cultural storages (such as electronic museums, libraries, exhibitions, databases, etc.)

b) electronic forms of new cultural objects (computer programs, networks, technologies, digital works of art etc.), which may eventually become objects of cultural heritage, but according to the method of preservation are similar to the category of intangible heritage.

Each of these types has its own characteristics. However, formally they are very similar and complement each other. The majority of researchers[3] believe that fundamental aesthetic innovation of digital storages is based on interactivity, which is not always present in a real museum or a gallery.

For the analysis of electronic characteristics of perception of reality in the sphere of interpretation and actualization of cultural heritage one should apply to another area of modern technology, actively used in the preservation of cultural heritage: 3D reconstruction (three-dimensional virtual historical reconstruction). Such computer reconstruction involve the creation of some virtual objects, giving information and visual material for exploring the history of heritage sites. It would seem that we are getting a new instrumental method for modeling historical processes or monuments through the creation of electronic simulation models.

The subsidiary nature of such digital projections affects the process of perception of cultural objects, specifying certain narrative of "angle of view", focusing on knowledge of true historical information. These models can be perceived only by prepared viewers (possessing sufficient historical knowledge), or visitors with developed historical imagination. The visual

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[2] CHANG, Rodney. *Definition & Description of Cyberart or the Virtual Art of Webism*. Online at: http://www.lastplace.com/page48.htm, accessed 30 November 2016.

[3] See EROHIN, S.V. *Aestetika cifrovogo izobrazitel'nogo iskusstva*. Saint-Petersburg: Aletejya, 2010; LEBEDEV, V. *Virtual'nyj muzej russkogo primitiva*. Online at: http://www.museum.ru/museum/primitiv/, accessed 24 May 2016; MAMCHUR E., SKORUPSKAYA, Y. *Virtual'nye miry iskusstva i nauki: problema referencii. In: Teoreticheskaya virtualistika: novye problemy, podhody i resheniya*. Moscow: Nauka, 2008; WANDS, Bruce. *Art of the Digital Age*. New-York, NY: Thames & Hudson, 2006.

conventionality of these reproductions does not interfere with the perception of historical information and does not block the visitor's perception. While the advent of computer simulation models, initially for a purpose of obtaining scientific data, had gradually acquired a mass character, having lost its epistemological aspect.

Creative features of digital reconstructions

3D reconstruction is being developed in two directions: the creation of presentation (tourism and recreation) reconstructions, giving a consumer an approximate idea of the facilities; and research reconstruction, solving interdisciplinary tasks in the field of preservation of cultural heritage. They will not be able to replace the missing monuments, but their advantage, according to the creators, is to give to a viewer more than just the idea of an object: the ability to assess its real dimensions, to contribute to "total immersion" of the viewer into the space of the monument.

If we carefully look at the process of creating virtual 3D reconstructions of monuments of history and culture, we note that the characteristic details of the monument, reflected on graphic documents and photographic documents by computer reconstruction are as if erased, neutralized. Visual image, in our impression, becomes "sterile", and the features of a real object or a written historical document are lost. Nevertheless, in the context of theories on the information society virtual world is considered a factor of evolution, a basis of culture of the future.[4] Computer reconstruction begins to become a new creative act, a kind of work of art itself. "Electronic expositions in museums include a wide range of projects in which the use of information technology vary from the creation of devices, with the help of which a visitor receives information about museum items, to multimedia expositions, where the main role is played already not by the real thing, but a multimedia product, which itself becomes an exhibit".[5] But a considerable feature of such work remains its fundamental incompleteness, which complicates not only the act of perception, but also the ability to save information. The result is not reconstruction but deconstruction of the authentic monument and a part of available information, which has been preserved in authentic historical sources.

Authenticity problems of cultural heritage preservation by digital means

The creators of digital reconstructions refuse to accept the fact of essential disadvantage of digital technologies - the death of authenticity. They create a special computer database software, in which "collect" electronic copies of objects with various details about styles, techniques or materials to create a simulated authenticity. Visual appeal, an opportunity of installation, animation, three-dimensional transformations are "blinding" for researchers and distracts them from understanding of instrumental limitations of digital technologies for simulation of real cultural heritage objects. Instead of obtaining additional opportunities to explore the monument by other methods, the mass audience's minds are fixed on an impressive visual image of a new virtual object of cultural heritage. In case of using virtual reconstruction in the Internet all laborious work with sources, methods of synthesis, methods of attribution remain "behind the scenes", and the user sees only the result of the work (movie, picture or the program itself).

[4] EROHIN, S.V. *Aestetika cifrovogo izobrazitel'nogo iskusstva*. Saint-Petersburg: Aletejya, 2010, p. 328.
[5] NOL, Lev. *Information technologies in museum practice*. Online at: http://museolog.rsuh.ru/nol_kniga.html, accessed 24 May 2016.

The problems of authenticity are leading to problems of forgeries, plagiarism and author rights in the digital world. As Roy Rosenzweig wonders, "How, for example, do we ensure the "authenticity" of preserved digital information and "trust" in the repository?" Though, he continues, "paper documents and records also face questions about authenticity, and forgeries are hardly unknown in traditional archive".[6]

Conclusion

The transition from the real spheres of interaction with cultural objects to the virtual sphere weakens interpersonal communication in the context of connection to tradition.

The result is the "removing" of traditional practice of reception of the past culture from educational, sacred, or axiological sphere to the sphere of entertainment, role-playing computer games or special programs. Such software products provide the ability to change at one's own will the historical events, to simulate the history of the family, the clan, the country. Genuine knowledge and genuine artifacts of cultural heritage need not to be used in actual practice, with the exception of a few scientific individuals' work. But most importantly, there will be no reason to preserve authentic remnants or ruins of historical and cultural monuments, as different digital technologies of 3D reconstruction, and digital simulations of life-size monuments will be perceived in society not only as an adequate substitute for the original, but as the only possibility to its perception. Therefore, virtual images of cultural heritage objects may prevail over their real images in our consciousness in the future.

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[6] ROSENZWEIG, Roy. Scarcity or abundance? Preserving the past in a digital era. In: *The American Historical Review,* 108(3), 2003, p. 743.

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