THE IMPORTANCE OF TECHNOLOGIES OF PRESERVATION AND RESTORATION OF HISTORICAL SETTLEMENTS

Khurramov Ikrom Kholmuradovich
Termiz State University

ABSTRACT

In this article, the factors that cause the disappearance of historical and cultural monuments and the legal documents accepted at the international level are analyzed, and the possibilities of using modern technologies for the restoration of historical monuments and the use of these technologies in our country are studied.

Key words: globalization process, historical and cultural monuments, anthropogenic impact, armed conflicts, natural disasters, vandalism, reconstruction, CyArk organization, Digital archeology.

In today's process of globalization, urgent tasks are appearing in front of the human society. As a result of anthropogenic and natural influences, samples of the process of human civilization, that is, historical and cultural monuments, are in danger of disappearing. This imposes on the countries of the world, every nation, nation, and citizen the responsibility of preserving the history of their ancestors.

On the importance of modern technologies in the restoration of historical monuments, foreign scientists P. Reilly [7], E. L. Boyt [8], B. Richard and H. Denard [9], CIS research scientists I. D. Kovalchenko [10], D. I. Jerebyat'yev [12], L.I. Borodkin [6] conducted systematic research. Among the local researchers, J.E. Togayev [13;29] studied the issues of historical reconstruction of the Bronze and Early Iron Age on the example of southern Uzbekistan, while M. Khojayeva [14] conducted scientific research on a topic related to this topic.

Most of the historical and cultural monuments in the world were damaged and destroyed mainly during the Second World War. In the second half of the 20th century, various religious, national, ethnic conflicts, the danger of extremism and terrorism began to demand attention to this issue at the international level. Based on this goal, from April 21 to May 14, 1954, on the initiative of UNESCO, an international conference was held in The Hague with the participation of 56 countries. The Hague Convention "On the Protection of Cultural Property During Armed Conflicts" was adopted at the international conference. The states that have joined the convention undertake to respect and protect the cultural assets located not only in their territories, but also in the territory of other participating states, in times of peace, conflict and occupation. On May 21, 1954, the First Protocol was adopted along with the Hague Convention. The first protocol applies only to movable cultural monuments (statues,

paintings, various movable exhibits). According to Article 1 of the first protocol, it was forbidden to take movable property out of the occupied territory, and it was stipulated to return it to the original territory after the end of the conflict[1].

The shortcomings of the Hague Convention and its first protocol were clearly visible due to the unstable political situation in the world in the 80s and 90s of the 20th century. As a result, the Second Protocol was adopted in March 1999 and provided more protection for cultural property than the Hague Convention and its First Protocol. International laws prohibit the participants of the conflict from attacking cultural monuments, committing any hostile actions against them, and using them for military purposes. In addition, it was determined that they must not allow themselves to be robbed or robbed and stop vandalism.

As a result of national conflicts in Baku in 1992, the Church of the Holy Virgin was demolished, and in 2011, as a result of the uprising in Bahrain, 43 Shia mosques, including the Amir Muhammad Braygi Mosque, were destroyed by the government. In India, on December 6, 1992, the Babri Mosque was destroyed by Indian nationalists, and on April 26, 2016, the National Museum of Natural History in New Delhi was destroyed by fire. In 2003, as a result of the US military actions in Iraq, the ancient archaeological sites and objects in Adab, Khatra, Isin, including statues with a history of 5000 years, were looted, and the ancient city of Babylon was destroyed. During the Ishid movement, the cities of Nimrud and Hatra, a part of the Nineveh wall and many historical monuments were looted and many monuments were destroyed. As a result of the Kosovo conflict, the Serbian literary heritage was destroyed, and in 2001, a pair of monumental statues from the 6th century called "Bamiyan Buddhas" were blown up by Taliban militants in Bamiyan region. We can rightfully describe this loss as the biggest loss among the historical monuments of the world. We can give many more examples of such losses. For example, the destruction of the city of Babylon in Iraq, the city of Leptis Magna in Libya, irreparable damage to the ancient monuments of Cyrene, etc.

In 2011-2017, many unique historical, archaeological and cultural monuments (about 30 ancient temples and shrines) were looted and destroyed due to the ISIS movement, which was formed as a result of extremist activities in Iraq and Syria. For example, in August 2015, the ancient temple of Baalshamin, and in October 2015, the monumental arch in the ancient city of Palmyra were blown up by ISIS militants. Among them, the temple of the god Bel, the tower of Elahbela, and the amphitheater were destroyed. We can give thousands more examples of such destructions. The saddest thing is that unique historical monuments are irreparably damaged and completely destroyed. To prevent such situations, on March 24, 2017, UNESCO adopted Resolution 2347 on the problem of destruction and looting of historical monuments and archaeological sites. Resolution No. 2347 was widely recognized as the first resolution of the UN Security Organization aimed entirely at the protection of

cultural heritage as a matter of international peace and security. It was emphasized once again that the destruction of cultural assets hinders reconciliation and development between people or leads to the opposite and destroys cultural diversity" [2].

In our country, legal-normative documents on the preservation of cultural and historical monuments have been adopted, and systematic work is being planned and implemented. The Constitution of the Republic of Uzbekistan, relevant laws and legal documents are important guidelines in this regard. In particular, the laws of the Republic of Uzbekistan "On the protection and use of objects of cultural heritage" and "On the protection and use of objects of archaeological heritage" clearly define the legal mechanisms for organizing work in this regard.

In the Republic of Uzbekistan, on August 30, 2001, the Law of the Republic of Uzbekistan "On the Protection and Use of Cultural Heritage Objects" was adopted. The purpose of this Law is to regulate relations in the field of protection and use of cultural heritage objects, which are the national wealth of the people of Uzbekistan [3]. The decision of the President of December 19, 2018 "On measures to fundamentally improve the activity in the field of protection of tangible cultural heritage objects" started a new stage in this regard. Today, in our country, 8,210 objects of tangible cultural heritage are under state protection. 4,788 of them are archaeological, 2,265 are architectural objects, 625 are monumental works of art, and 530 are attractions. According to the information, during the repair and restoration works of the cultural heritage objects, a lot of damage to the historical and artistic value of the objects was observed by the customer, contractor, designer, expert organizations.

For example, in the historical complex of Sitorai Mohi Khosa in Bukhara region, as a result of improper restoration work, its artistic decorations, patterns, and tiles were destroyed, and its historical and artistic value was damaged in the amount of 28 billion soums [17]. In our country, until March 2023, "On the protection and use of cultural heritage objects", "On the protection and use of archaeological heritage objects", "On museums" and "Removal of cultural assets" on export and import", "Convention on the Protection of Cultural Property in the Event of Armed Conflict" (The Hague, 1954), "On the Protection of World Cultural and Natural Heritage It is planned to develop a project of the Cultural Heritage Code that summarizes the norms of the Conventions (Paris, 1972), the International Convention on the Protection of Intangible Cultural Heritage (Paris, 2003) and other legal documents and international agreements [18].

Such monuments are of great importance in the development of human spirituality, and the spirituality of the society is an important condition and guarantee of the high development of the state. The spirituality of society does not appear suddenly, it arises due to its needs at all stages of personal development. Spirituality is not renewed, but relies on the existing spiritual heritage. Historical monuments, architectural monuments play the main role in the formation of the national spirituality. Spirituality

is enriched by the values and experiences that have reached us. The future generation can look into the future only by studying history. Historical and cultural monuments reflect the evolution of human development and serve for human learning. Through the study of history, mankind gets the experience of living. Preserving our historical and cultural heritage for a long time without damaging it is the main task of all mankind.

Factors threatening the preservation of historical and cultural heritage:

1. Natural impact: catastrophic events, climate change, natural disasters, erosion.

2. Anthropogenic impact: war, armed conflicts, lack of state control, religious and national conflicts, population growth.

3. Ignorance: people's spirituality, lack of knowledge, ignorance led to looting and complete disappearance of many unique historical monuments in the world.

I should also emphasize that one of the main reasons for the destruction and destruction of historical and cultural monuments through human actions is ignorance. The whole world is suffering because of the actions of people who do not understand or do not want to understand how important it is to preserve cultural heritage. "Each element of the historical-cultural heritage, each archaeological object is a link of the historical whole, united and unified according to its historical-cultural significance. Their losses cannot be returned. Therefore, cultural preservation of heritage is the right and duty of every nation, because the image of the society is reflected in the values that are the source of creativity"[4].

Humanity is obliged to preserve the monuments that are disappearing due to natural and human actions and to deliver them to the next generation. Today, world scientists are proposing the use of advanced technologies (digital preservation and restoration) as a solution to the problem. With the help of advanced technology, it is possible to preserve historical monuments, especially those that are in danger of disappearing, in 3D format. In the 80s and 90s of the 20th century, in the developed countries, from the 2000s, in the Russian state, scientific studies were conducted on the issue of using three-dimensional modeling in historical research. 3D (three-dimensional) modeling is the creation of a three-dimensional project based on an architectural plan or artifact itself, drawing, image, etc.

Using the possibilities of this technology, it is possible to effectively use any historical material, even ancient architectural structures, in the reconstruction of historical cities [13]. Through 3D modeling, we create a technological image of any three-dimensional material, this technique is used in architecture, cinema, engineering, medicine and many other fields. Also, by restoring parts of historical and cultural monuments or completely restoring them, we can preserve the monuments and show them to the general public. By creating virtual models of historical cultural monuments that have not been preserved, they can be effectively used in scientific research. In the 1990s, a number of achievements were made in the field of creating virtual models of

monuments, research and organization of digital museums in the USA and European countries. According to researchers, people from any part of the world will be able to visit virtual museums and view historical monuments virtually. True, virtual monuments will not be like the real ones, but they allow people to observe monuments in any corner of the world. Or we will have a complete idea about the monuments that have not reached us. Through the modeling of monuments, we will have the opportunity to preserve the monuments for a long time, to study them and to show them to the general public. Currently, the study, preservation and popularization of historical and cultural heritage through virtual 3D models is spreading widely in the world. Virtual modeling is now a developing field in the world. Currently, dozens of works in this field have been completed. Several professors and researchers at the Harvard Semitic Museum have expanded on this. They say, "Modern digital 3D visualization allows full-scale virtual reconstruction of only damaged or partially preserved ancient architectural remains today. By using digital animation and adding color and lighting effects, it is possible to show how these sites and monuments have changed over time, from their original construction and ancient use to their eventual abandonment and destruction" - they emphasize that they have the opportunity to show.

From June 14, 2021, within the framework of the "New Uzbekistan. New look" program, a new project on digitalization of historical monuments and monuments in 3D format began its operation in our country. This project will be implemented mainly in Samarkand. Gori Amir mausoleum, Bibikhanim mosque, ancient Afrosiyab settlement, Ulugbek observatory, Registan square and Juma mausoleum were selected from our historical monuments for digitization. With the help of advanced technologies, it is possible to perform digital reconstruction of our historical monuments and display them in VR format. In our country, by Nurulin Timur, the Yerqorgan ancient settlement (an ancient city ruin of the 9th-8th centuries BC-6th century AD) [15] and the Sogdian architecture of the Oqtepa Yunusabad castle (V - XIII century monument) [16] 3d reconstruction.

Three-dimensional virtual reconstructions of countries, cities and monuments that have completely disappeared become wonderful visual aids that tell about their history and can provide people with detailed information about their history. Now every interested person has the opportunity to get acquainted with the historical monument in any region of the world. Three-dimensional models are an excellent tool for visualizing different states of the monument without interfering with the original, and unlike traditional architecture and construction restoration, virtual restoration allows you to build and reflect options, hypothetical images, states of historical values. , which does not threaten their validity [11]. This, in turn, is important to us in the correct formation of information about cultural heritage. Therefore, the creation of 3D models of historical and cultural monuments provides an opportunity to create a set of data for

the next generation, and creates conditions for observing and researching historical and cultural monuments for everyone at any place, at any time of the year, and at any time of the day. It is appropriate to use the possibilities of 3D model widely in the preservation of historical monuments that have been handed down from our ancestors to us for thousands of years and to pass them on to the next generation, as well as in the development of tourism, which is considered one of the most profitable industries in the world.

REFERENCES

1. Protocol to the Convention on the Protection of Cultural Property in the Event of Armed Conflict". portal.unesco.org.Articles 1-3.

2. Resolution No. 2347: Implementation of cultural heritage protection on a global scale. http://www.qil-qdi.org/resolution-2347

3. National database of legislative information, 21.04.2021, number 03/21/683/0375)

4. European Convention on the Protection of Archaeological Heritage of the Council of Europe. - Valletta, January 16, 1992//archeology-russia.org/laws/ets66.shtml.

5. Dictionary.Info. Online encyclopedia. https://qomus.info/encyclopedia/cat-r/restavratsiya-uz/

6. Boroodkin L.I. Jerebyatev D.I. Technology 3D-modelirovaniya v istoricheskix issledovaniax otvizualizaiza k analytice //Istoricheskaya informatika.№2, 2012.-S.49-63.

7. Reilly p., Rahtz S. Archeology and the information age: a global perspective.-London, 1992,-432p.

8. Vote E.I. A New Methodology for Archaeological Analysis: Using Visualization and Interaction to Explore Spatial Links in Excavation Data//A dissertation submitted in partial fulfillment of the requirements for the degree of doctor of philosophy in special studies.-Rhode Island, 2001.-134p.

9. Richard B., Denard H. The Pompeii Project: Digital Research and Virtual Reconstruction of Rome's First Theater // Journal of Computers and the Humanities. 2003.Vol.37(1).-P.129-140.

10. Kovalchenko.I.D. Methody istoricheskogo issledovaniya. 2nd ed., dop. M., 2003. 486 p. 11. Kandulkova, Y. "Information technologies for preservation of cultural monuments", Heritage: ESPRIT, prof. Krastev, T., Varna: LiterNet, 2009, https://liternet.bg/publish25/io kandulkova/informacionni.htm

12. Jerebyatev D.I.Metody istoricheskoy rekonstruktsii pamyatnikov istorii i kultury Rossii sredstami trekhmernogo kompyuternogo modelirovaniya.Avtoref.diss.kand.ist.nauk.-Moskva.2013.-28 p.

13. Togayev Jasur Erkinovich. Issues of historical reconstruction of the Bronze and Early Iron Age (in the case of South Uzbekistan)[Text]: monograph/ Jasur Erkinovich Togayev.-Tashkent: Shafoat Nur Fayz, 2020.-29b

14. Khodjayeva M. Improvement of 3D models of historical monuments application of digital technologies//. ACADEMICIA: An International Multidisciplinary Research Journal. Year: 2021, Volume: 11, Issue: 10. -P. 1260 - 1268. https: //www.indianjournals.com.>...

15. Nurulin T.S. 3D reconstruction of the ancient settlement of Erqurgan//Architecture and construction of Uzbekistan.-Tashkent, 2022.-N2-3.-p.27-38

16. Nurulin T.S. Virtual reconstruction of Oktepa Yunusabad fortress// Architecture and construction of Uzbekistan. Tashkent, 2021. N2-3.-S. 24-31.

17. https://yuz.uz/uz/news/madaniy-meros-obekteri-muhofazasi-kuchaytirilad

18. https://www.gazeta.uz/oz/2022/06/01/museums/

19. https:www.weforum.org/agenda/2018/04/3d-modelling