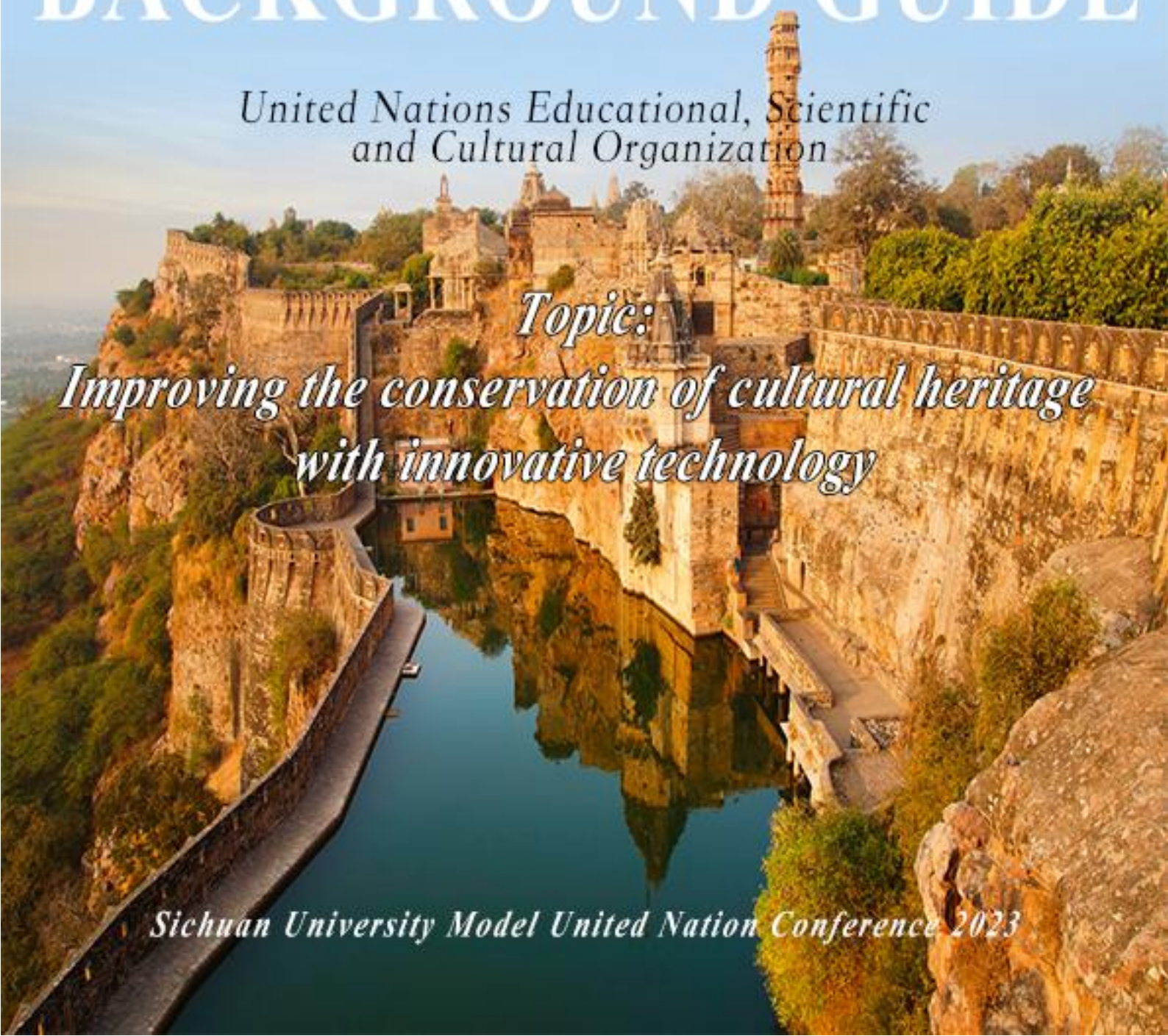
BACKGROUND GUIDE

United Nations Educational, Scientific and Cultural Organization



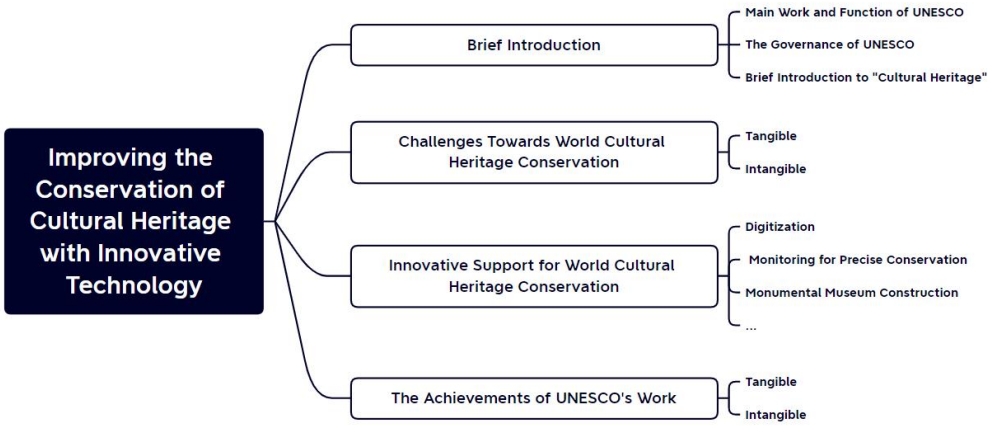
Topic:
Improving the conservation of cultural heritage with innovative technology

Sichuan University Model United Nation Conference 2023

“Since wars begin in the minds of men, it is in the minds of men that the defences of peace must be constructed. ”

“战争起源于人之思想，故务需于人之思想中筑起保卫和平之屏障”

Framework of this Background Guide



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1.Brief Introduction

1.1 Brief Introduction to UNESCO

UNESCO is United Nations Educational, Scientific and Cultural Organization, which founded in 1946 and headquartered in Paris, France, is the specialized agency of the UN in the fields of education, science and culture. Its purpose is to contribute to peace and security by promoting collaboration among nations through education, science and culture in order to further universal respect for justice, for the rule of law and for the human rights and fundamental freedoms which are affirmed for the peoples of the world, without distinction as to race, sex, language or religion, by the Charter of the United Nations.[1] Guided by this, UNESCO's programs cover a wide range of educational, scientific, and cultural exchanges that influence human perceptions and behaviors, and even the policies of a nation.

1.1.1 Main Work and Functions of UNESCO

According to the Constitution of UNESCO, the main work of UNESCO, as well as its functions are:

(a) Collaborate in the work of advancing the mutual knowledge and understanding of peoples, through all means of mass communication and to that end recommend such international agreements as may be necessary to promote the free flow of ideas by word and image;

(b) Give fresh impulse to popular education and to the spread of culture:

By collaborating with Members, at their request, in the development of educational activities;

By instituting collaboration among the nations to advance the ideal of equality of educational opportunity without regard to race, sex or any distinctions, economic or social;

By suggesting educational methods best suited to prepare the children of the world for the responsibilities of freedom;

(c) Maintain, increase and diffuse knowledge:

By assuring the conservation and protection of the world's inheritance of books, works of art and monuments of history and science, and recommending to the nations concerned the necessary international conventions;

By encouraging cooperation among the nations in all branches of intellectual activity, including the international exchange of persons active in the fields of education, science and culture and the exchange of publications, objects of artistic and scientific interest and other materials of information;

By initiating methods of international cooperation calculated to give the people of all countries access to the printed and published materials produced by any of them.[2]

Besides this, as the development of UNESCO, the strategic objectives and focus of its work change from phase to phase. Document 37C/4 (2014-2021) sets out

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[1] UNESCO, *Constitution of the United Nations Educational, Scientific and Cultural Organization*, https://www.unesco.org/en/legal-affairs/constitution., Accessed March 16, 2023.

[2] UNESCO, *Constitution of the United Nations Educational, Scientific and Cultural Organization*, https://www.unesco.org/en/legal-affairs/constitution., Accessed March 16, 2023.

UNESCO's work strategy for 2014-2021, including overall objectives, global priorities, strategic objectives and functions. Among them, Strategic Objective 7 "Protecting, promoting and transmitting heritage" elaborates on the value of cultural heritage, as well as the challenges, objectives and methods of protecting cultural heritage, and serves as a guide for UNESCO's cultural heritage protection work.

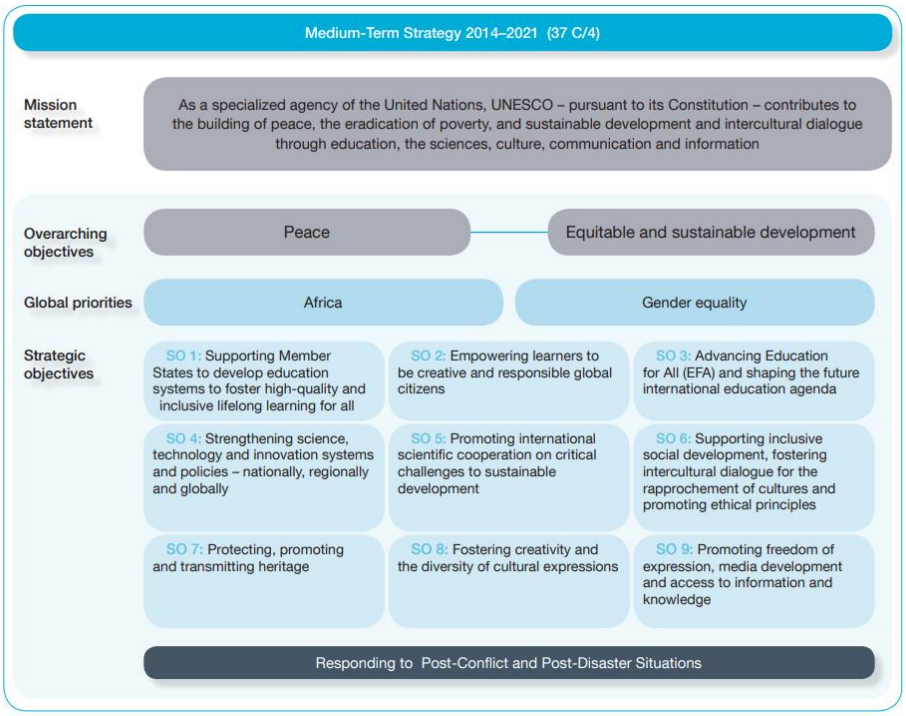

Fig. 1.2 The mission statement, overarching objectives, global priorities and strategic objectives of UNESCO's Medium-Term Strategy 2014-2021.[1]

Relevance of UNESCO's functions at the global, regional and national levels: Indicative list

	International level	Regional level	National level
1. Serving as a laboratory of ideas and generating innovative proposals and policy advice in its fields of competence	High	Low	Low
2. Developing and reinforcing the global agenda in its fields of competence through policy analysis, monitoring and benchmarking	High	Low	Low
3. Setting norms and standards in its fields of competence and supporting and monitoring their implementation	High	Low	High (national implementation)
4. Strengthening international and regional cooperation in its fields of competence, and fostering alliances, intellectual cooperation, knowledge-sharing and operational partnerships	High	High	High (fostering alliances, intellectual cooperation, knowledge-sharing and operational partnerships)
5. Providing advice for policy development and implementation, and developing institutional and human capacities	Low	Low	High

Fig. 1.3 UNESCO's functions and their relevance at the global, regional and national levels[2]

[1] UNESCO, *Medium Strategy 2014-2021*, p.13, https://unesdoc.unesco.org/ark:/48223/pf0000227860.
[2] Ibid.

1.2 The Governance of UNESCO

1.2.1 The General Conference

The General Conference consists of the representatives of UNESCO's Member States. It meets every two years, and is attended by Member States and Associate Members, together with observers for non-Member States, intergovernmental organizations and non-governmental organizations (NGOs). Each country has one vote, irrespective of its size or the extent of its contribution to the budget.

The General Conference determines the policies and the main lines of work of the Organization. Its duty is to set the programmes and the budget of UNESCO. It also elects the Members of the Executive Board and appoints, every four years, the Director-General.

1.2.2 The Executive Board

The Executive Board is elected by the General Conference. It represents the General Conference, exercises the powers delegated to it, and deals with the questions with which it is entrusted. Acting under the authority of the General Conference, the Executive Board examines the programme of work for UNESCO and corresponding budget estimates submitted to it by the Director-General. It consists of 58 Member States each with a four-year term of office.

According to the Constitution of UNESCO, it is responsible for the Executive Board to prepare the agenda of the General Conference and examine the programme of work for UNESCO and corresponding budget estimates submitted by the Director-General. It submits them to the General Conference with its recommendations. The Executive Board could make recommendations on the admission of new states that are not members of the United Nations. Besides, the Executive Board could summon extraordinary sessions of the General Conference and other kinds of international and non-governmental conferences, etc.

1.2.3 The Secretariat

The Secretariat consists of the Director-General and other supporting staff. The Director-General shall be nominated by the Executive Board and shall be named upon the consent of the General Conference.

1.3 Brief Introduction to Cultural Heritage

Cultural heritage is the treasure of every country and nation, as well as the common wealth of all mankind. It has many different types and forms, and can be divided into two categories according to its form: **tangible cultural heritage** and **intangible cultural heritage**.

1.3.1 Tangible Cultural Heritage

The concept of “cultural heritage” was defined in *Convention Concerning the Protection of the World Cultural and Natural Heritage*, or the *World Heritage Convention* by UNESCO in 1972.. Although the term “cultural heritage” in this convention refers to “tangible cultural heritage” in today’s view, this definition has

gradually become the standard for defining "cultural heritage" in UNESCO's conservation efforts. This definition has gradually become the standard for defining "cultural heritage" in UNESCO's conservation efforts.

In World Heritage Convention, Cultural Heritage includes three varieties:

Monuments refers to architectural works, works of monumental sculpture and painting, elements or structures of an archaeological nature, cave dwellings and combinations of features, which are of outstanding universal value from the point of view of history, art or science.

Group of buildings refer to groups of separate or connected buildings which, because of their architecture, their homogeneity or their place in the landscape, are of outstanding universal value from the point of view of history, art or science.

Sites refers to works of man or the combined works of nature and man, and areas including archaeological sites which are of outstanding universal value from the historical, aesthetic, ethnological or anthropological point of view.

1.3.2 Intangible Cultural Heritage

In 2003, the 32nd session of the General Conference of UNESCO adopted the *Convention for the Safeguarding of Intangible Cultural Heritage*, marking the inclusion of intangible cultural heritage into the category of cultural heritage in the previous sense and its specialization as a separate form of protection.

According to this convention, intangible cultural heritage means the practices, representations, expressions, knowledge, skills - as well as the instruments, artefacts and cultural spaces associated therewith - that communities, groups and, in some cases, individuals recognize as part of their cultural heritage. From this definition, the convention divided "intangible cultural heritage" into 5 varieties:

(1) Oral traditions and expressions, including language as a vehicle of the intangible cultural heritage;
(2) Performing arts;
(3) Social practices, rituals and festival events;
(4) Knowledge and practices concerning nature and the universe;
(5) Traditional craftsmanship.

The protection of cultural heritage is an important part of UNESCO's work. UNESCO believes that the protection of the world's cultural and natural heritage is essential to address the challenges of our time (including climate change, poverty, inequality, the digital divide, and increasingly complex emergencies and conflicts). At the same time, sustainable development will suffer in the absence of strong cultural underpinnings. It is also evident from the definition of cultural heritage that when considering the use of innovative technologies in cultural heritage conservation, we should take into account both tangible and intangible cultural heritage conservation efforts, and adopt targeted and efficient methods according to the characteristics of both types of cultural heritage.

2. The Challenges towards Conservation

While the current framework and mechanisms of the UN system have evolved well over the years, there are still many potential challenges behind protection: the highest global geo-strategic tensions, existential climate crises, and growing global mistrust. In addition to the five significant difficulties mentioned above, there is also a gap in the uniform evaluation of the assessment of cultural heritage protection. All these challenges required delegates' reflection throughout the conference to find possible solutions to the problems.

2.1 Tangible Cultural Heritage

2.1.1 Armed conflict and regional wars

Cultural property has suffered grave damage during recent armed conflicts, and, because of the developments in the warfare technique, it is in increasing danger of destruction[1]. Protecting cultural heritage is often soft and ineffective in the face of violent conflict and war. 1954 saw the signing of the Convention for the Protection of Cultural Property in the Event of Armed Conflict by the US and Britain as States Parties. However, in the 1991 Gulf War, the US and Britain continued to bomb heavily for more than 20 days, with 24,000 bombs falling on Iraqi soil. They devastated the ecology and cultural heritage of Basra, Baghdad and Mosul. These areas are all World Heritage sites, and Najaf and Karbala are sacred sites for Shiah.

Meanwhile, The number of armed conflicts has been escalating since the 1980s − first in Central Asia (Afghanistan), then in parts of the Middle East (Iraq and Syria) and West Africa (Mali). These have increased the destruction of historic sites by terrorist groups and an explosion in the trafficking of cultural artefacts[2]. In conflict situations, cultural objects have repeatedly become commodities sold locally, shipped abroad, or traded abroad. In some cases, States trading in cultural objects stand idly by and fail to carry out effective regulation and management, and the markets in these countries create demand for cultural objects and provide funding, leading to the exacerbation of conflicts. In other cases, States have even become complicit in the trafficking of cultural objects, facilitating access to the financing for proxies, allies and other notorious armed groups. Trafficking in cultural objects is sometimes even orchestrated by the State. Looting and trafficking in antiquities in war are emerging as new challenges.

2.1.2 Urbanization and economic development

As the world continues to develop and technology is constantly updated, world cultures are passed on. However, people are xenophobic. In economic development and the exchange of people from different places, blind xenophobia will inevitably hinder the conversation and spread of cultures. Although the world is culturally inclusive, the international conservation of cultures has always been solved. In general, when any indigenous culture comes into contact with a foreign culture, it only chooses to accept and absorb those things that are compatible with its cultural

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[1] UNESCO. 2020. *Convention for the Protection of Cultural Property in the Event of Armed Conflict with Regulations for the Execution of the Convention*, May 14, 1954. Accessed Feb 25, 2023. https://en.unesco.org/sites/default/files/1954_Convention_EN_2020.pdf.

[2] UNESCO. 2017. "A historic resolution to protect cultural heritage" . Accessed Feb 25, 2023. https://en.unesco.org/courier/2017nian-di-3qi/historic-resolution-protect-cultural-heritage.

values and rejects those elements that are incompatible with it. Urbanization and tourism development can result in large crowds, which can sometimes cause irreparable damage to the tangible cultural heritage. Besides, some tangible heritages have even been overturned, rebuilding the original ancient heritage to meet the needs of tourists for tourists.

2.1.3 Climate changes and environment disasters

Climate change is fast becoming one of the prominent threats to World Heritage sites worldwide[1]. Climate change poses a significant challenge for protected area managers. Its impacts are ubiquitous and complex, increasing pressures such as pollution, land use change and habitat fragmentation. At many World Heritage sites, climate change's direct and indirect impacts may threaten their outstanding universal value (OUV), wholeness and authenticity. Climate change can affect OUV integrity and authenticity. Climate change is a threat multiplier and will increase in nature, exacerbating pressures from all sides. These pressures come from vulnerability and exacerbate other stresses including, but not limited to, this fragmentation, loss of tangible cultural heritage and the impacts of unplanned or poorly managed tourism.

Coral reefs, representing much of the World Heritage in tropical marine areas, are vulnerable to climate change or other environmental pressures. More than half of the world's reefs are under threat of degradation[2].

2.2 Intangible Cultural Heritage

2.2.1 Industrialization

In today's highly developed material civilization, industrial production is surging, and technology is constantly innovating, with the risk of replacing some of the purely handmade non-traditional items such as Chinese wooden arch bridges and the art of embroidery in Palestine. The co-existence of industry and intangible culture is an emerging issue

2.2.2 Entertainment changes

The model of using tourism to support conservation has proved successful in many places, especially in the early stages of tourism development in heritage sites, where tourism has demonstrated a strong power in bringing about the attention and support of the community for the conservation of cultural heritage. Over time, however, the adverse effects of tourism on cultural heritage began to be revealed, and the contradictions between tourism development and heritage conservation became more pronounced due to the nature of intangible cultural heritage itself.

As modern tourism is mainly a popular cultural activity with an entertaining and commercial character, many tourists are in the mood for cultural curiosity, which makes it possible for intangible cultural heritage to be improperly staged, commercialized or even vulgarized in the process of development. To meet the secular needs of tourists, some things that represent local traditional cultural

[1] UNESCO. 2016. “World Heritage and Tourism in a Changing Climate”, May 25, 2016. Accessed Feb 25, 2023. https://whc.unesco.org/en/activities/883/.
[2] Ibid.

characteristics are arbitrarily reshaped or imitated; some activities without connection with local culture appear out of nowhere. In some cases, so-called reservations have been created for tourist destinations. The local population is driven out, and the rest is enclosed in a cultural showcase for visitors. Some indigenous Indian tribes in America, for example, play the role of primitive people and demonstrate primitive cultures. In China, villages also have been transformed and designated as folk villages.

2.3 Evaluation and Assessment of the Cultural Heritage Protection

In the 1960s, “authenticity” was introduced into the field of heritage protection. The concept of authenticity has developed with the evolution of modern society and the understanding of heritage, and has far exceeded its orthodox meaning. In 1964, Venice Charter proposed that "it is our duty to pass on cultural heritage truthfully and completely[1]", which clearly emphasized the importance of authenticity to heritage.

However, cultural authenticity standards are unique, making it difficult for the international community to assess the effectiveness of protection. Spatially, there is no absolute principle of authenticity that is universally applicable. Different countries have different interpretations of the authenticity of heritage conservation due to differences in social and economic systems, values, cultural perspectives and views on conservation. Secondly, from a historical perspective, authenticity is always relative and a concept closely linked to time. History moves on, culture evolves, and each generation interprets and continues to write history according to its interpretation of historical facts, which, in whatever form, is a reconstruction of history. Some of this reconstruction takes on a secondary form of authenticity over time.

3. Innovative Technical Support for World Cultural Heritage Conservation

"Society is taking advantage of virtual means to meet in the practice of some knowledge and traditions. It is these practices and knowledge that are giving people hope, that allow people, despite distance and confinement, to meet and identify themselves. "

María Claudia López, President, ICOMOS Colombia (Colombia)

3.1 Digitization

Adapting to the digital transformation is a core priority for cultural policies. Since the rise of the global Internet in the early 1990s, countries have been carrying out digital conservation of cultural heritage, and digital humanities have become a consensus. Today, as technology continues to innovate and diverse digital forms of cultural heritage emerge, preserving and passing on the world's cultural heritage is also changing.

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[1] Venice Charter.1964.

3.1.1 Digital Collection and Storage

Digital collection is the primary focus of cultural heritage digitization. It involves gathering and documenting cultural heritage using various digital technologies and tools in various formats, including text, data, pictures, audio, and video, motion capture, 3D modeling, virtual reenactment, Etc.

Through databases, disk arrays, optical disk towers, optical fiber, network connections, and associated laws and protocols, digital storage technology successfully safeguards cultural legacy materials. Thus, the primary method for maintaining and safeguarding cultural artifacts is now digital recording. Digital resources have a number of benefits over conventional storing techniques, including the ability to store a lot of data and the reduced risk of data loss, ease of upkeep, accuracy in documenting, and speed of search.[1]

3.1.2 Digital Restoration

The difficulty of cultural heritage preservation and transmission lies in the destruction of cultural heritage by changes in production methods, living environments, and unavoidable disasters. Modern digital restoration and reproduction techniques are becoming increasingly sophisticated, providing more advanced means and methods for transmitting cultural heritage.

For example, for destroyed cultural relics, we can use digital technology to stitch together, replicate and restore them virtually to show the appearance of the former ancient capital, ruins, and cultural relics in an all-round and multi-perspective way. Another example is that for intangible cultural heritage that is on the verge of disappearing with the progress of production methods, we can adopt 2D and 3D digital animation technologies to restore, reproduce and interpret its phenomena, scenes, events, or processes.

3.1.3 Digital Presentation and Dissemination

Based on the massive stored digital resources of cultural heritage, we can present them through various digital platforms. This presentation and dissemination method integrates virtual reality, graphics, sound and image, and other multimedia presentation means. Through flat display, panoramic display, or three-dimensional space imaging, the effects generated by sound, light, and electricity are presented to the public intuitively in an all-round and multi-perspective manner. Besides, public curiosity and curiosity can be satisfied through the form of interactive experience.

One is the museum display, which requires a high level of consistency to the information's original expose and the content's original material. The second is the online display, which is disseminated through online platforms.

(1) Digital Museum

Digital Museum is a museum built in cyberspace. It uses digital technology to realize the live digital display of the physical museum exhibition hall, turning the

[1] Huang Yonglin, Tan Guoxin. Research on Digital Protection and Development of China's Intangible Cultural Heritage[J], *Journal of Central China Normal University (Humanities and Social Sciences Edition)*, 2012,51(02):49-55.

boring data into a vivid model, thus increasing the audience's interest in viewing.

Unlike traditional museums, digital museums are not just static displays of collections but also dynamic historical flows and realistic three-dimensional scenes brought into the museum. For example, digital museums create three-dimensional scenes for museums by means of virtual technology, combining sound and light, to enhance the visitor experience and understanding of cultural relics. Another example is that digital museums can present the essence of living culture through a lively approach, such as the historical change of the production process, the cultural state of the craft, the way of art dissemination, the folk way of life, and the whole process of thousands of cultural arts. Digital museums can also leverage global cultural resources to interpret and present the same artifact in multiple ways.

(2) Cultural Heritage Online

Through the use of technology, Cultural Heritage Online digitizes offline institutions. Information from various media types is integrated into the web digital display. Cultural Heritage Online spreads information through telecommunications, cellular communications, the Internet, and digital broadcast networks without regard to set time or location restrictions.

3.1.4 Digital Cultural Products

The real value of cultural heritage lies in its plethora of cultural components, which can be used to create, market, and sell exceptional and one-of-a-kind cultural goods that can be reintegrated back into the lives of individuals. The development of digital technology has greatly enhanced cultural productivity.

For example, technologies such as digital virtual simulation can promote the cultural industry to break through the boundaries of various media, carriers, and time and space to realize cross-carrier presentation and cross-temporal interaction of cultural creativity, thus creating new industries and new scenarios for the cultural industry, and also expanding the boundaries and imagination of traditional cultural communication. In addition, the digital development and utilization of cultural heritage can be further developed into industrialized production and operation, which is conducive to forming new industries and derivative products, extending the industrial chain, and increasing the development speed of the cultural industry.

3.2 Monitoring for precise conservation

Cultural heritage monitoring refers to the regular professional inspection, consideration, and evaluation of the state of conservation of cultural heritage following internationally recognized conservation guidelines. Nowadays, the daily monitoring of cultural heritage is no longer a tedious manual but incorporates more scientific and technical means.

3.2.1 Information Resource Management Technology

Cultural heritage has a wide variety of information resources, including tangible and intangible, mobile and immobile, digital and non-digital, Etc. Therefore, building

or improving monitoring and management information systems using innovative technologies is necessary to monitor cultural heritage more effectively.

Specifically, it is technically necessary to realize unified search and open system interconnection and establish rich means of query, statistics, and display. In addition, the deep excavation and accumulation of cultural heritage information resources can vertically study a series of social issues related to this cultural heritage in a certain period; horizontally, it can supplement the breadth and depth of cultural heritage information resources.

3.2.2 Monitoring Cultural Heritage from Space

Space technology is of great significance to Cultural Heritage monitoring, among which earth observation satellite technologies, spatial data and analysis tools have tremendously improved over the past decade and that they provide powerful additional means for decision-makers and stakeholders to find comprehensive solutions to today's global challenges for Cultural Heritage properties[1]. The following are a few instances of cutting-edge ways that space technology is being used to observe cultural heritage.

(1) Monitoring Using Remote Sensing

Over the past few years, habitat decline, fragmentation, and degradation of World Heritage have been tracked using remote sensing apps. Site managers currently have the option to keep an eye on specific OUVs using very high resolution imagery from sources like IKONOS, WorldView, and Pleiades, which makes it possible to perform jobs like microhabitat mapping, invasive species identification, and exact assessment of encroached area, among others. Site managers can also benefit from the remote sensing strategy during humanitarian emergencies and natural catastrophes that cause successional changes over time.[2]

(2) Climate and Environment Monitoring Center

The construction of meteorological observation stations and the use of space technology to observe various meteorological indicators of heritage sites can further effectively protect the ecological environment of heritage sites. For example, satellite images from different periods are used to compare and monitor the changes in vegetation and human construction activities within the conservation area of the heritage site, as well as temperature, relative humidity, rainfall, sunshine, wind speed, wind direction and sand accumulation, Etc., in order to provide a basis for protecting the ecology of the heritage site.

(3) Monitoring with Copernicus

The European Union's Copernicus Earth Observation initiative keeps track of the globe and its surroundings. The Sentinel family of dedicated spacecraft and contributing operations via already-existing private and public satellites make up the program's space component. Currently, there are six different kinds of spacecraft that make up the Sentinels, and each operation is built on a constellation of two satellites

[13] United Nations Educational, Scientific and Cultural Organization, Monitoring world heritage from space, https://unesdoc.unesco.org/ark:/48223/pf0000380737?posInSet=27&queryId=09972f97-255e-4c47-a959-73ff4996e597, 2021

to meet the criteria for return and coverage. Each satellite operation is equipped with a variety of technologies, such as radar and multi-spectral imaging equipment for watching the land, oceans, and atmosphere. The Copernicus services process and evaluate a plethora of satellite and in-situ data in addition to the Sentinel satellites in order to provide prompt and useful information[1].

(4) LIDAR

LIDAR, the technology used in space exploration, creates images by sending laser pulses back and forth between predetermined regions. LIDAR can be used to map areas that are too dangerous or remote to access using traditional techniques, helping us to document changes in cultural heritage over a number of years and to develop a framework for how best to protect that heritage.

(5) HIST

The International Centre on Space Technologies for Natural and Cultural Heritage (HIST) under the auspices of UNESCO is an international organization established in 2011 by UNESCO as a Category 2 Centre in Beijing, China, and hosted by Aerospace Information Research Institute of Chinese Academy of Sciences. It is committed to using space technologies to assist UNESCO and its Member States in safeguarding and promoting the sustainable use of the World Heritage, the World Network of Biosphere Reserves, and Global Geoparks.

3.3 Resource Integration and Sharing

3.3.1 Cross-departmental Cooperation

Combining multiple resources of libraries, archives, museums, and other departments, carrying out cross-industry and cross-departmental cooperation, and establishing a rich resource sharing mechanism are conducive to better preserving and bringing into play the historical and cultural value of cultural heritage.

In Canada, many libraries and archives have generally adopted a combined development strategy. For example, in 2004, the Georgiana Public Library in Ontario, Canada, partnered with the local archives and museum to digitize primary source materials electronically and set up a booth at the Canadian National Exhibition in partnership with the museum and archives, which was named "Planting Seeds of Heritage. Likewise, the Colorado Digitization Project (CDP) includes the Colorado State Archives, the Denver Public Library, and other Colorado historical societies and museums to preserve resources related to Colorado's history, culture, government, and industry[2].

3.3.2 International Cooperation Mechanism

International cooperation is also essential for preserving the history of human civilization. On the one hand, many worldwide projects are further expanding the scope of digital sharing of cultural heritage resources; on the other hand, countries in

[45] United Nations Educational, Scientific and Cultural Organization, Monitoring world heritage from space, https://unesdoc.unesco.org/ark:/48223/pf0000380737?posInSet=27&queryId=09972f97-255e-4c47-a959-73ff4996e597, 2021

[2] Xiao Ximing, Li Jinrui, Foreign Public Digital Cultural Resources Integration Model and Its Reference[J], Library and Information, 2015(01):9-14.

some regions are also cooperating closely in cultural heritage conservation with good results due to the convenience of political, economic and cultural exchanges and similar cultural traditions.

3.4 Social Media

Nowadays, the rapid development and application of digital and information technology have significantly changed people's productivity and lifestyles. The Internet and new media have introduced new channels to disseminate living heritage, as well as new opportunities for ICH transmission, especially facing the COVID-19 crisis.

Examples of this included live streaming of performances, social media campaigns to raise consciousness, online seminars conducted by bearers, and professional and scientific efforts to protect living cultural legacy from the pandemic. Some theaters made free online material of previous shows accessible after theaters and performing venues closed. Additionally, communities adopted creative strategies in response to the crisis of losing the opportunity for the gathering rite due to the pandemic to guarantee that larger crowds could still take part in significant ritual events. Several significant religious celebrations and ceremonies were live broadcast for viewers to watch at home.[1]

In such circumstances when physical interaction is impossible, telling a good story via social media is required highly for communities to express, transmit their living heritage, find alternative performing venues, and even broaden the reach of their practices on online platforms.

3.5 Emerging Technologies

3.5.1 Artificial Intelligence (AI)

AI is a helpful instrument for protecting prehistoric human ingenuity from the effects of the environment and human activity. It can speed up the process of determining how long a cultural legacy will last and what steps should be done to ensure its survival in the future.

For instance, high-tech aerial drones can precisely record dependable, high-resolution aerial data of more than 10,000 pictures to gather information and evaluate the situation. Another illustration is the artificial intelligence (AI) used in the Time Machine Project by the European Commission, which has been taught to gather and evaluate data from a broad chronological and geographic area. By comparing papers, relics, landmarks, and other types of dispersed historical datasets, it will locate and connect them.

3.5.2 3D Scanning and Reconstruction

In the past, 3D scanning and reconstruction technology was stuck with the challenge of insufficient accuracy, which the development of digital technology has solved in recent years. High-precision 3D digital technology has provided practical

[1] United Nations Educational, Scientific and Cultural Organization, Living Heritage in the face of COVID-19, https://unesdoc.unesco.org/ark:/48223/pf0000377671?posInSet=1&queryId=6a366fe9-63e4-409b-95fe-bbf9bff446f8, 2021

solutions for many projects, such as converting craft processes into digital cultural forms, reconstructing ancient figures, costumes, and architecture through 3D modeling, Etc.

3.5.3 Virtual Reality (VR)

Virtual reality enables the reconstruction of multidimensional cultural spaces, offering the possibility of immersion in a digital world, thus broadening the tourism experience, providing tailored, interactive access, and emotionally engaging the audience. Thus, VR is increasingly becoming essential for cultural heritage research, conservation, and communication.

3.5.4 Augmented Reality(AR)

AR can present a virtual and real fusion by overlaying digital information with the real environment using tools such as cell phones or head-mounted displays to enhance the experiencers' perception of the real world environment. The sense of satisfaction promotes more social sharing and communication. In addition, AR extensions can bring collections that cannot be displayed due to space constraints to life.

3.5.5 Motion Capture

Motion capture is of great significance for effectively recording and transmitting intangible cultural heritage, especially for many performances, dances, and other heritage forms mediated by body movements. The progress of motion capture technology is mainly focused on reducing the cost, weakening the technical requirements of the venue and operators, thus expanding its application areas[1].

[1] Ma Xiaona, Tu La, Xu Qingying. Current Status of Digital Development of Intangible Cultural Heritage[J], SCIENCE CHINA: Information Science, 2019,49(02):121-142.

4. The Achievements of UNESCO's preservation work

4.1 Tangible Cultural Heritage

4.1.1 Abu Simbel, Egypt

Fig. 4.1 The scenery of Abu Simbel

(1) Brief Introduction

The ruins of Abu Simbel are located on the west bank of the Nile, north of the Second Waterfall, in the south of Aswan, near the border with Sudan. The construction of the cave temple began in the fifth year after the accession of Ramses II and was completed in the 35th year of his pharaonic reign. Later, as the pharaonic era came to an end, it fell into oblivion and was gradually buried in the yellow sand, disappearing from history.

In 1813, the Swiss explorer Jean Burckardt was visiting Abu Simbel when he occasionally caught a glimpse of the huge seated statue at the entrance to the cave temple. It was not until 1909 that the Abu Simbel cave temples were finally cleared. During the world economic depression of the 1930s, archaeological excavations in Egypt became more difficult. With the outbreak of the Second World War, all excavations in Egypt ceased. After the war, excavations in Egypt were gradually resumed by European and American countries. These monuments were saved from the rising waters of the Nile by an international campaign launched by UNESCO between 1960 and 1980.

(2) Actions and Achievements

In 1960, a vast programme to save the temple sites from flooding was set up by UNESCO and the Egyptian government, with 51 countries contributing funds and 22 countries sending engineers, archaeologists, art historians, architectural engineers, and geologists to participate in this protracted international archaeological congress. Together, they engaged in the most concentrated archaeological battle of their lives, doing everything they could to make time, removing all the artifacts they could, and

waging a huge battle to defend Egypt's monuments. At the same time, some of the less important artifacts were taken over by museums from all over the world. Thus, for the first time, an international effort to save an ancient Egyptian cultural site was successful.[1]

4.1.2 Angkor

Fig. 4.2. Angkor

(1) Brief Introduction

Angkor, in Cambodia's northern province of Siem Reap, is one of the most important archaeological sites in Southeast Asia. It complex represents the entire range of Khmer art from the 9th to the 14th centuries, and includes many indisputable artistic masterpieces. Angkor is a major site exemplifying cultural, religious, and symbolic values, as well as containing high architectural, archaeological, and artistic significance.

The site integrity, however, is put under dual pressures:

1. Endogenous: exerted by more than 100,000 inhabitants distributed over 112 historic settlements scattered over the site, who constantly try to expand their dwelling areas;

2. Exogenous: related to the proximity of the town of Siem Reap, the seat of the province, and a tourism hub.

(2) Actions and Achievements

The ICC-Angkor (International Coordinating Committee for the Safeguarding and Development of the historic site of Angkor) created on 13 October 1993, ensures the coordination of the successive scientific, restoration and conservation-related projects, executed by the Royal Cambodian Government and its international partners.

It was a heavy mission for the APSARA National Authority to take

[1] Ling Hu Ruoming. An important archaeological site that contributed to the birth of the world cultural heritage: the Abu Simbel Cave Temples in ancient Egypt[J]. Popular Archaeology,2016(03):80-87.

responsibility for the Angkor Park with a total area of 40100 hectares where 120,000 inhabitants were living in this park. The APSARA National Authority formulated and implemented strategic plans that consisted of two main phases.

Phase I (1992-2004): In this phase, "A ten-year management plan" was developed to mobilize human resources, and strengthen international cooperation to safeguard Angkor Park. The successful conservation of the property by the APSARA National Authority, monitored by the ICC-Angkor, was crowned by the removal of the property from the World Heritage List in danger in 2004.

Phase II (2004-present and future): In addition to Phase I, the APSARA National Authority has expanded its efforts for the development of the Angkor region in a long-term vision. On the one hand, the effort is to protect, conserve and enhance the Angkor Heritage Park and ensure its sustainability, on the other hand, the goal is to attract more tourists to increase revenues, and to better serve the inhabitants living with the heritage. To ensure the sustainability of the Angkor region, the APSARA National Authority first pays more attention to human resource development. Second, the internal structure was reformed to strengthen effective management and improve public service delivery by establishing the APSARA Service Centre.

The APSARA National Authority has sufficient resources and has an appropriate coordination mechanism (ICC-Angkor and UNESCO) and a consultation mechanism (consultation with local authorities and communities) to monitor, control and ensure that all activities, constructions and projects undertaken by the local population, the private sector and international partners do not have a negative impact on the heritage site. To build a harmonious relationship with local communities living with heritage, the APSARA National Authority offers opportunities for local communities to get involved in the elaboration and implementation of local development plans.

4.1.3 The Borobudur Temple Compounds

Fig. 4.3. The Borobudur Temple Compounds

(1) Brief Introduction

The Borobudur Temple Compounds is one of the greatest Buddhist monuments

in the world and was built in the 8th and 9th centuries AD during the reign of the Syailendra Dynasty. The monument is located in the Kedu Valley, in the southern part of Central Java, at the center of the island of Java, Indonesia. As an outstanding example of Indonesia's art and architecture from between the early 8th and late 9th centuries， it exerted considerable influence on an architectural revival between the mid-13th and early 16th centuries.

The main threat to the ensemble is from：

1. Weak developmental regulations:The unreasonable development could compromise the extraordinary relationship between the main monument and its wider setting and could also affect the Outstanding Universal Value of the property. Tourism has exerted considerable pressure on the property and its hinterland.

2. Potential threats:A growing rate of deterioration of the building stone as well as the possible eruption of Mount Merapi.

(2) Actions and Achievements

In 1948, in the face of imminent disaster, the newly formed Republic of Indonesia made the preservation of its deep and diverse cultural heritage a central priority. In 1965, Indonesia asked UNESCO for advice on ways to counteract the problem of weathering at Borobudur and other monuments. In 1968 Professor Soekmono, then head of the Archeological Service of Indonesia launched his "Save Borobudur" campaign, persistent in his efforts to organize a massive restoration project.

In the 1970s, with the help of UNESCO, money, resources, and professionals from twenty-seven countries were gathered together for a monumental effort to save the ancient temple. A bold plan was developed: to dismantle and rebuild the five square terraces from the base up; to clean each of the stones; and to reinforce the foundation, at the same time installing an efficient drainage system behind the walls and under the floors of the galleries.

The actual work began in 1975. Over one million stones were moved during restoration and set aside to be individually identified, cataloged, cleaned and treated for preservation. Borobudur became a testing ground for new conservation techniques, and new procedures to battle the microorganisms eating away at the stone. Using state-of-the-art techniques, experts in engineering, chemistry, biology, and archeology all shared their skills to solve the multitude of problems.

The monument was closed to the public for ten years. The restoration cost twenty-five million dollars and took eight years of labor and unprecedented international cooperation to complete. The day-to-day work was led by Soekmono, who personified the spirit of Borobudur and international cooperation as he worked with his colleagues.

The modern restoration techniques learned at Borobudur set the standards of preservation for future efforts throughout the world. Today at Borobudur, the work of archeologists and local stone carvers continues, using traditional Javanese methods to repair and replace the many damaged sculptures, including more than a few headless Buddhas.[1]

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[1] ...*Saving Borobudur* accessed March 3,

4.1.4 Historic Monuments of Ancient Kyoto

Fig. 4.4. Historic Monuments of Ancient Kyoto

(1) Brief Introduction

"Historic Monuments of Ancient Kyoto" is one of the most typical World Heritage sites situated in an urban context. Built in A.D. 794 on the model of the capitals of ancient China, Kyoto was the imperial capital of Japan from its foundation until the middle of the 19th century. As the center of Japanese culture for more than 1,000 years, Kyoto illustrates the development of Japanese wooden architecture, particularly religious architecture, and the art of Japanese gardens, which has influenced landscape gardening the world over. The assemblage of architecture and garden design in the surviving monuments of Kyoto is the highest expression of this aspect of Japanese material culture in the pre-modern period.

Because the scattered component parts exist within an urban context, uncontrolled development poses a threat to the inscribed property's overall visual integrity. Although its component parts are limited to temples, shrines, and a castle, it is quite crucial to protect its surrounding context as well as the property itself in an integrated manner, to transmit its Outstanding Universal Value to future generations.

(2) Actions and Achievements

In this context, all of the buildings, and gardens composing the property are protected under the 1950 Law for the Protection of Cultural Properties. while continuing activities to preserve the sites and monuments of the inscribed properties, the local authority (Kyoto city) introduced a new landscape policy in 2007 which comprises 5 main elements and the support systems.

In terms of ownership of the inscribed property, religious organizations own sixteen of the seventeen parts, and Kyoto City owns the remaining part, the castle of Nijo-jo. Day-to-day management is the responsibility of the individual owners who conduct necessary repairs including seismic strengthening.

As fire is the greatest risk to the property, the monuments are equipped with automatic fire alarms, fire hydrants, and, if necessary, lightning arresters. In addition,

2023.https://www.pbs.org/treasuresoftheworld/borobudur/blevel_1/b6_saving.html

some owners of the parts organize fire brigades that work in cooperation with public fire offices.

The Agency for Cultural Affairs, Kyoto and Shiga Prefectures, and Kyoto, Uji and Otsu Cities provide the owners of the parts with both financial assistance and technical guidance for their protection and management.

Furthermore, Kyoto city has kept continuing efforts to improve this wholistic scheme concerning better communication between relevant authorities and local populations, better design standard for new construction, and more efficient implementation. This new scheme would be a "best practice" to other WH sites in urban context in many aspects, including an Integrated approach for conserving historic urban landscape; Using existing and/or new legal and institutional tools in one concept; Implementing public involvement in a huge modern city; Protecting surrounding context in connection with the OUV of the WH property.

4.1.5 The Acropolis of Athens

Fig. 4.5. The Acropolis of Athens

(1) Brief Introduction

In the second half of the fifth-century bc, Athens, following the victory against the Persians and the establishment of democracy, took a leading position amongst the other city-states of the ancient world. In the age that followed, as thought and art flourished, an exceptional group of artists put into effect the ambitious plans of Athenian statesman Pericles and, under the inspired guidance of the sculptor Pheidias, transformed the rocky hill into a unique monument of thought and the arts.

The Acropolis' monuments, having survived for almost twenty-five centuries through wars, explosions, bombardments, fires, earthquakes, sackings, interventions, and alterations, have adapted to different uses and the civilizations, myths, and religions that flourished in Greece through time. The Acropolis of Athens and its monuments are universal symbols of the classical spirit and civilization and form the greatest architectural and artistic complex bequeathed by Greek Antiquity to the world.

A monument usually suffers from damages, which can be classified as mechanical and biological. We can further distinguish mechanical damages into those

that result from physical disasters and human actions. On the Acropolis, the precious restorations are not only responsible for using inappropriate materials, but also for the unscientific restoration of the collapsed areas of the monument. Thus the areas chosen for the restoration interventions are those that have suffered the most serious damage.[1]

(2) Actions and Achievements

In order to maintain the authenticity and structural integrity of the monuments, an advisory body, the Committee for the Restoration and Conservation of the Acropolis Monuments, was founded in 1975 and is responsible for planning, directing, and supervising the interventions. The works are based on clear theoretical and scholarly foundations, and follow the principles of the Venice Charter. The interventions are limited to the necessary and respect the ancient structural system while remaining consistent with the principle of reversibility. Moreover, the techniques and the tools used for the restoration works are similar to those of the ancient craftspeople, while the white marble used for completing the eroded architectural elements is quarried from the same mountain as in antiquity (Mt. Penteli). Therefore, the restorations are fully compatible with the original parts of the monuments.

In 1999, the establishment of the Acropolis Restoration Service allowed to increase in the academic and technical personnel and made the immense development of the restoration works possible, under the supervision of the aforementioned Committee and in cooperation with the competent Ephorate. The extensive research program and the methodology implemented are innovative in this field and act as a reference point for other restoration projects. The financial resources for the works on the site are derived from the State budget as well as from European Union funds.

In the conservation and use of the Acropolis, the Athenian government has been exemplary in three ways: the establishment of a targeted and comprehensive conservation commission (management body), the definition of a long-term conservation and restoration program, and the construction of a museum of the site. These three elements are essential and complementary to each other to ensure the conservation and use of the Acropolis site.

It can be said that the Acropolis Restoration Centre is an international model for the conservation and restoration of ancient sites and monuments, with its high level of monument restoration techniques, its comprehensive research methodology, its scientific handling and application of new technologies and materials, and its interventions and practices for the restoration of the Acropolis.[2]

4.2 Intangible Cultural Heritage

4.2.1 The Silk Roads

(1) Brief Synthesis

The Silk Roads were an interconnected web of routes linking the ancient

1 Vassiliki Eleftheriou, Dionisia Mavromati, Chen Xi. The Acropolis restoration project - with a discussion of advanced techniques for geometric information documentation[J]. Architectural Heritage,2016(02):71-91+2-3. DOI:10.19673/j.cnki.ha.2016.02.008.

2 Acropolis Restoration Service.[OL].[2019-11-10].Http://www.ysma.gr/en/

societies of Asia, the Subcontinent, Central Asia, Western Asia and the Near East, and contributed to the development of many of the world's great civilizations. It took shape between the 2nd century BC and 1st century AD and remained in use until the 16th century, linking multiple civilizations and facilitating far-reaching exchanges of activities in trade, religious beliefs, scientific knowledge, technological innovation, cultural practices, and the arts.

(2)Actions and Achievements

An Intergovernmental Coordinating Committee for the overall Silk Roads was formed in 2009. This is a steering committee composed of representatives of all States Parties involved in the nominations of all Silk Roads corridors. The ICOMOS International Conservation Centre-Xi'an (IICC-X) is the Secretariat for Committee. The Committee oversees the development of transnational serial nominations of corridors identified in the ICOMOS Silk Roads Thematic Study. In terms of management, this Committee aims to implement a coordinated management system based on mutual agreement and to provide guidelines on conservation principles, methods, and management.

The magnitude of this Silk Roads corridor, the number of sites, the comparative fragility of many of them and the enormous distances between them, make monitoring a formidable task. This international collaboration needs to be supported by national collaboration and well-developed management structure, particularly in Kazakhstan and Kyrgyzstan, if the many fragile archaeological sites are to share information on the most advanced techniques and conservation measures that are appropriate and beneficial for the sites.

Through valid management plans, international seminars, innovative technical cooperation, and the updating of testing methods, the committee has made significant achievements in the practical exploration of the conservation of cultural landscapes, the continuation of the landscape, the improvement of residents' lives and industrial development, as well as the application of historic townscapes (HUL) in historic cities and villages.

4.2.2 The Coffee Cultural Landscape of Colombia

(1) Brief Introduction

The Coffee Cultural Landscape of Colombia (CCLC) is a continuing productive landscape consisting of a series of six sites, which integrate eighteen urban settlements. The property is the result of the adaptation process of Antioquian settlers, who arrived in the 19th century, a process which persists to this day and has created an economy and culture deeply rooted in the coffee production tradition. The Coffee Cultural Landscape of Colombia is an authentic reflection of a centenary process of man's adaptation to the challenging geographical and climatic conditions of this area, known as the Eje Cafetero.

It illustrates natural, economic, and cultural features, combined in a mountainous area with collaboratively farmed coffee plantations, some of these in clearings of high forest.

(2)Actions and Achievements

The CCLC area is large, involving a number of complexities and the need to develop consensus among several stakeholders, coffee growers being the most important inhabitants of the region.

Thus aligning the CCLC management plan with the Colombian Coffee Growers Federation(FNC)'s strategic plan was the first consensus arrived at. A detailed management plan with well-defined indicators of progress is yet another management strategy to measure the effectiveness of the initiatives undertaken.

The management of the CCLC is coordinated by a management committee, which was established by the Ministry of Culture, FNC, the Governors of Caldas, Quindío, Risaralda , and Valle or their delegates, representatives of the Coffee Growers and universities. An Executive Director was appointed to oversee the implementation of the management system, which is guided by a management plan, developed with the support of the Centre for Regional, Coffee and Business Studies (CRECE).

Within the management framework, strong emphasis is given to the economic and social well-being of the inhabitants and coffee farmers, their appropriation of the cultural heritage, and the environmental sustainability of coffee production in the living cultural landscape. The management plan has addressed many of the predominant pressures, including inappropriate development, gold mining, changes to local farming traditions through inappropriate use of pesticides, fertilizers, waste-water processing and soil erosion. Apart from that, the respective land use plans yet need to be integrated with and adjusted to the management plan objectives and additional legislation is required for the semi-urban and rural area traditional buildings, which contribute to the significance of the CCLC.

This public-private partnership can leverage resources from international and other national sources to accomplish its desired objectives. On the communications side, the partnership has also made possible the creation of a visual identity that reinforces the property´s values, the ability to have coffee growers to actively participate in decisions on the priorities of the region, aligning research and social initiatives to sustainability objectives.

In sum, a major undertaking has been launched that involves strong institutionality, consultation, socialization processes, education and funding has been launched with outstanding results in a few years of operation.

4.2.3 Indonesian Batik

(1) Brief Introduction

Indonesian Batik is a traditional hand-crafted dye-resist textile rich in intangible cultural values, passed down for generations in Java and elsewhere since the early nineteenth century. Indonesian Batik has a rich symbolism related to social status, local community, nature, history, and cultural heritage; provides Indonesian people with a sense of identity and continuity as an essential component of their life from birth to death; and continues to evolve without losing its traditional meaning.[1]

[1] Indonesian Batik, Accessed March 3,2023.https://factsanddetails.com/indonesia/Arts_Culture_Media_Sports/sub6_4b/entry-4050.html#chapter-7

However, one challenge that older artisans face is the lack of interest in the younger generation to learn the art of batik making. For example, in the city of Yogyakarta, one of Indonesia's main batik centres, nearly all of the artisans are aged 40 years and above. Many find it imperative that younger generations of Indonesians to become interested in the craft to save it from dying out.[1]

(2)Actions and Achievements

Various actors such as governmental and non-governmental institutions and community-based associations have jointly carried out safeguarding measures including awareness-raising, capacity-building, and educational activities, and intend to continue these efforts.

This movement to make revive and cultivate the culture of batik-making has been encouraged by it being added to UNESCO's Intangible Heritage List in 2009, as well as grassroots organizations like Perkumpulan Wastra Indonesia who are working to raise awareness of Indonesia's rich textile traditions.

4.2.4 The Great Spas of Europe

(1) Brief Introduction

The Great Spas of Europe bear exceptional testimony to the European spa phenomenon, which gained its highest expression from around 1700 to the 1930s. This transnational serial property comprises eleven spa towns, located in seven European countries. Together, these sites embody the significant interchange of human values and developments in medicine, science, and balneology.

An important concern will be to continue to develop cooperation and collaboration between the individual parts and to ensure that the property as a whole is effectively managed and the overall management system is adequately resourced. Development pressures may be an issue since these are living cities which will need to continue to adapt and change to maintain their role as spa towns. Managing tourism so that it is truly sustainable may also become a challenge. A management approach at the landscape level, which considers the relationship between each part, the buffer zone, and the broader setting is also needed to maintain views to, and from, the picturesque wider landscape.

(2)Actions and Achievements

An overall management system for the whole property has been established, with a Property Management Plan and Action Plan agreed upon by all stakeholders. Responsibility for the protection and management of each of the eleven parts of the property rests with the national/regional government. An Inter-Governmental Committee, made up of national World Heritage Focal Points and/or a representative of the highest monument or heritage protection authority, keeps track of matters relating to the property. A Great Spas Management Board (GSMB), made up of the Mayors of the eleven components, is responsible for the operational coordination and overall management of the property in close consultation with the Inter-Governmental Committee. The Board sets and manages the budget for the overall management

[1] THE MAKING OF: BATIK IN INDONESIA, Accessed March,3,2023.https://www.matterprints.com/journal/making/making-of-batik-indonesia/

functions, monitors and reviews the Action Plan, approves and publishes an Annual Report, employs the Secretariat, and directs other activities for the property as a whole.

The Site Managers Group includes site managers for each part, the Secretariat, and any specialist advisors. The Site Managers Group is essentially an expert group for debate and exchanges of experience and to advise the GSMB on relevant management issues. The international structure is supported and serviced by a Secretariat jointly funded by all the parts.

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