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Architectural conservation of the rock-hewn churches of Lalibela, Ethiopia: A study on preservation and socio-economic conservation

Conservation Architecturale Des Églises Taillees Dans La Roche De Lalibela, Éthiopie: Une Étude Sur La Préservation Et La Conservation Socio-Économique

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Written by:

F. Nonyelum Richard¹ <https://orcid.org/0009-0008-5810-6787>**Sh. Golkarian²** <https://orcid.org/0000-0002-1858-0133>

Abstract


The 11 monolithic structures that makeup Ethiopia's Rock-Hewn structures in Lalibela were painstakingly cut out of solid rock in the 12th century. Currently, these churches are facing various issues of deterioration such as exposure to natural and human-caused harms. This article critically evaluates the architectural conservation initiatives made to preserve these amazing buildings, which are often recognized as some of the most astounding architectural accomplishments in history. It carefully examines the preservation techniques used, highlighting their cultural relevance and the inherent values crucial for maintaining the Lalibela rock-hewn churches. Through the socio-economical aspects, it draws attention to the lack of funding and lack of technical requirements. Also, sustainable conservation activities develop a sense of ownership and bring awareness to the value of protecting cultural heritage. The report suggests methods for strengthening capability and creating a special conservation fund. The study uses a qualitative research methodology focusing on in-depth case studies from Lalibela, other rock-cut structures, and published academic works. As a result, this research offers valuable suggestions to encourage efficient conservation techniques. Finally, these observations contribute to a greater comprehension of the challenges in preserving the world's architectural legacies by providing helpful references for analogous sites facing similar conservation challenges.


Keywords: Cultural heritage, Conservation, Preservation, Ethiopia, Rock-Hewn churches.

Abstrait

Les 11 structures monolithiques qui composent les structures éthiopiennes taillées dans la roche à Lalibela ont été minutieusement découpées dans la roche solide au 12^{ème} siècle. Ces églises sont actuellement confrontées à divers problèmes de détérioration, tels que l'exposition aux éléments et les dommages naturels et causés par l'homme. Cet article évalue de manière critique les initiatives de conservation architecturale prises pour préserver ces bâtiments étonnants, qui sont souvent reconnus comme l'une des réalisations architecturales les plus étonnantes de l'histoire. Il examine attentivement les techniques de préservation utilisées, soulignant leur pertinence culturelle et les valeurs inhérentes cruciales pour le maintien des églises creusées dans le roc de Lalibela. A travers les aspects socio-économiques, il attire l'attention sur le manque de financement et le manque d'exigences techniques. L'étude utilise une méthodologie de recherche qualitative axée sur des études de cas approfondies de Lalibela, d'autres structures taillées dans la roche et des travaux universitaires publiés. Nos recherches offrent des suggestions précieuses pour encourager des techniques de conservation efficaces. Enfin, ces observations contribuent à une meilleure compréhension des défis de la préservation des héritages architecturaux du monde en fournissant des références utiles pour des sites analogues confrontés à des défis de conservation similaires.

Palabras clave: Patrimoine culturel, Conservation, Préservation, Éthiopie, Églises rupestres.

¹ Department of Architecture, Near East University, Near East University, Near East Boulevard, Nicosia, Turkey.
 Researcher ID: JDD-3692-2023

² Department of Architecture, Near East University, Near East University, Near East Boulevard, Nicosia, Turkey.
 Researcher ID: GZA-9671-2022

Introduction

One of the most outstanding instances of monolithic construction in the world is thought to be the rock-hewn churches of Lalibela, a UNESCO World Heritage Site in northern Ethiopia. These churches, which were carved out of solid rock and constructed in the 12th century, are works of art. However, the churches have been dealing with substantial conservation issues because of both natural weathering and human activity, therefore it is essential to design a thorough and long-term plan for their preservation and upkeep. Preserving the Lalibela rock-hewn churches is crucial for Ethiopia and the rest of the globe. To create successful preservation plans, specialists in the field of architectural conservation have been collaborating closely with local governments and communities. (UNESCO World Heritage Center, 2021).

The study aims to shed light on practical conservation measures that can guarantee the survival of the rock-hewn churches of Lalibela, Ethiopia, for the coming generations. With data and research gathered, using the qualitative research approach, from published works, this study reveals the dire need of the Lalibela rock-hewn churches in conservation works to protect their historical importance. The structural stability and integrity of the site are being impacted by natural forces including weathering, erosion, and geological instability as well as human-caused elements like tourism, urbanization, and vandalism. (Kumar et al., 2020) Numerous conservation initiatives have started because of these difficulties to guarantee the site's preservation for future generations. The natural weathering process is one of the biggest obstacles to preserving the rock-hewn cathedrals of Lalibela, (Renzulli et al., 2011). The soft volcanic tuff used to construct the churches is prone to deterioration from wind, water, and other natural variables. Furthermore, the churches' structural integrity has significantly deteriorated because they were exposed to the elements for over 800 years, (Ebabey & Zeleke, 2023). Experts in the field of architectural conservation have been developing numerous preservation solutions to deal with these issues. These tactics include safeguarding the churches from additional environmental harm, restoring the original structural integrity of the buildings using non-invasive methods, and fostering sustainable tourism to support regional economic growth while also preserving the site. (Gebregziabher, 2020).

This study's objectives are to examine the difficulties in conserving the rock-hewn churches of Lalibela, discuss current conservation techniques, and suggest upcoming preservation plans. The purpose of the study is to shed light on practical conservation measures that can guarantee the survival of rock-hewn churches for the coming generations.

The focus of this study is on the preservation of the rock-hewn buildings of Lalibela, a UNESCO World Heritage Site in northern Ethiopia. The study's objectives are to examine the difficulties in conserving historic churches, talk about present conservation techniques, and suggest upcoming preservation plans. The scope of the study includes a look at how the churches' structural integrity is affected by human activity, natural weathering processes, and the role that experts in architectural conservation play in creating long-term preservation plans. The main objective of the project is to develop efficient conservation techniques that can guarantee the survival of rock-hewn churches for future generations (Janssens, 2017).

Theoretical Framework or Literature Review

Architectural conservation

The process of preserving, restoring, and maintaining buildings or structures with architectural and historical significance is referred to as architectural conservation. Keeping these structures functioning and aesthetically pleasing while preserving their historical value and character is the aim of architectural conservation. Architectural conservation is described as "all actions aimed at safeguarding the value and integrity of the architecture, and the environment in which it was created, including artistic, historical, cultural, social, and technical aspects" by the International Council on Monuments and Sites (ICOMOS, 2010). The necessity to strike a balance between preservation and transformation is one of the major topics of architectural conservation. To prevent harming the structure's historic integrity or that of the surrounding area, any alterations must be properly planned and carried out. This calls for a thorough comprehension of the legacy resource's historical, cultural, and social value as well as a team effort involving stakeholders, subject matter specialists, and the larger community (Jokilehto, 2017). The use of appropriate materials and methods is an important component of architectural

conservation. Feilden (2003) asserts that because they have stood the test of time and are better suited to the original design and construction processes, older materials and construction methods are frequently more compatible with heritage structures and locations than modern ones. Trillo et al., (2021) point out the use and role of digital technologies to replace conventional methods, because they offer the possibility to integrate multiple layers of information and to link across industries, communities and higher education with a flexibility and timelessness that traditional techniques like paper-based could not demonstrate. In particular, HBIM offers the chance to connect a variety of information about heritage assets and convey it to multidisciplinary professionals in the form of BIM models, embedding important characteristics of historic structures while allowing designers to easily gather and reassemble information. These tools can help with the planning and implementation of conservation actions as well as offer new ways to interact with cultural places. However, the necessity to maintain the authenticity and integrity of the heritage resource must be balanced with the use of technology. Community involvement and engagement is another important aspect in architectural conservation. In order to ensure that local people's beliefs, opinions, and needs are taken into account, it is crucial to include them in the conservation process. Community involvement can promote a sense of ownership and responsibility for cultural property as well as increase public awareness of and support for conservation activities (Cameron, 2013).

Socio-economic aspects of conservation

Several socioeconomic factors that are important to consider are included in architectural conservation. These elements can be examined from a variety of angles:

- **Economic Impact:** The local and regional economies are significantly impacted by architectural conservation. The creation of jobs and economic prosperity are frequently brought about by preservation efforts. Tourist spending on lodging, food, transportation, and related services can increase when historic buildings draw visitors. In addition to increasing property prices and luring businesses, conservation activities can also help the economy recover (Donovan, 2008).
- **Job creation and skills preservation:** Employment possibilities are created by

architectural conservation initiatives across a variety of industries, including architecture, engineering, construction, historic preservation, and tourism. For restoration and conservation work, skilled labor and specialized knowledge are needed, which promotes job growth and the preservation of traditional crafts and skills.

- **Tourism and cultural heritage:** Historic structures that have been preserved and cultural heritage sites are popular tourist destinations. Through visitor spending on things like admission fees, guided tours, trinkets, and hospitality services, this tourism potential brings in money for local economies. Architectural conservation supports cultural tourism, aids in the protection and promotion of cultural assets, and fosters a sense of pride and identity among the local population (Gražulevičiūtė–Vileniškė & Urbonas et al., 2011).
- **Community development and revitalization:** Valuing cultural heritage can be done in various ways. One way is through the emotional and aesthetic pleasure that people get from visiting heritage sites. Another way is through the economic benefits that they bring, such as generating revenue, creating jobs, and providing training opportunities. Preserving cultural heritage can also create economic benefits, such as city center revitalization, heritage tourism, an increase in property values, and small business incubation. The priority in economic development is to create jobs and local household income, which can be achieved by rehabilitating historic buildings. This creates a substantial economic impact on jobs and income since the labor required for building rehabilitation is high. Jobs in cultural heritage preservation are generally well-paid, and there is a shortage of the required skills. The preservation of cultural heritage also contributes to city center revitalization. Heritage tourism is another economic benefit generated by cultural heritage, as it is becoming one of the leading sectors in the post-industrial economy. The effect of cultural heritage on property values is significant. Research shows that there is a statistically significant price premium associated with the inclusion of a property in a historic district. Cultural heritage also plays a role in small business incubation, which is crucial for the local economy. The adaptation of historic buildings to modern needs without harming their physical structure and architectural character is

- essential in preserving cultural heritage. Import substitution is another issue that creates a sustainable local economy since expertise, labor, and materials from the local market are mainly used for the preservation of cultural heritage. The differentiation of products usually gains a monetary premium, and cultural heritage is an element that best expresses the diversity and identity of a place (Gražulevičiūtė, 2006).
- Sustainability and environmental considerations: The development and revival of communities depend heavily on architectural conservation. Communities maintain their sense of place and cultural identity by maintaining historic buildings (Correia et al, 2014). Neighborhoods and heritage areas that have been well-preserved frequently draw businesses, people to live there, and investors, which boosts the local economy and raises property value. Additionally, revitalized areas for community activities are created by historic building restoration and adaptive reuse, improving the quality of life for locals (O'Reilly, 2005).
 - Educational and research opportunities: To further the understanding of architectural history, conventional building methods, and cultural assets, architectural conservation offers educational and research opportunities. By sponsoring academic research, cultural institutions, and heritage organizations, it promotes a broader understanding and appreciation of the built environment (Jokilehto, 2017).
 - Restoration: In architectural conservation, the term "restoration" is frequently used to describe the process of returning a structure or location to its former form and state. To ensure that the building or site is appropriately restored to its historical, cultural, and architectural value, significant research and documentation are required. The Venice Charter, written by the International Council on Monuments and Sites (ICOMOS) in 1964, defines restoration as "the action or process of accurately revealing the form and features of a building, structure, or site as they appeared at a particular period in its history." (ICOMOS, 1964)
 - Preservation: Another term frequently used in architectural conservation is "preservation," which describes the process of keeping a building or place in its current condition without making significant changes. The goal of preservation is to conserve the building or site's original character and significance while stabilizing and protecting it. Preservation, according to the National Park Service, is "the act or process of applying measures necessary to sustain the existing form, integrity, and materials of a historic property." (National Park Service, 1993) The goal of preservation is to stabilize and sustain the building or site's current condition with little or no intervention.
 - Rehabilitation: The act of adapting a building or site for a new purpose while maintaining its historical, cultural, and architectural significance is referred to as "rehabilitation." To accommodate new uses, rehabilitation entails substantial site or building modifications, but these alterations shouldn't diminish the significance of the original structure. Rehabilitation is described in the Secretary of the Interior's Standards for Rehabilitation as "the process of returning a property to a state of utility, through repair or alteration, which makes possible an efficient contemporary use while preserving those portions and features of the property which are significant to its historic, architectural, and cultural values." (National Park Service, 1993)

Architectural conservation terminologies

Architecture, history, art, engineering, and archaeology are all included in the interdisciplinary study of architectural conservation. The different terminology used in architectural conservation are crucial for comprehending the field's many facets. An overview of the terms and definitions typically used in architectural conservation is given in this examination of the literature.

- Conservation: John Ruskin, a 19th-century English art critic and writer, defined "conservation" as the process of preserving or maintaining a building's historical, cultural, and architectural significance. (Ruskin, 1849). Conservation is a proactive approach that focuses on preventive maintenance and repair of buildings and sites, rather than restoring them after damage has occurred. (ICOMOS, 2010).

A wide range of expertise and abilities are needed for the difficult and interdisciplinary topic of architectural conservation. To ensure that structures and sites are preserved and protected for future generations, it is essential to understand the numerous terminologies used in architectural conservation. The most often used

terms in architectural conservation are conservation, restoration, preservation, and rehabilitation. These terms are specified by worldwide charters, guidelines, and standards.

Rock-Hewn Structures Around the World

Since ancient times, rock-hewn buildings have captured people's attention because they provide a fascinating look at the architectural prowess of earlier civilizations. Around the world, rock-cut cathedrals provide evidence of the creativity and flexibility of past civilizations. They offer insightful understandings of the architectural, ecclesiastical, and cultural activities of their time. There is magnificent architecture carved out of solid rock in addition to the churches of Lalibela. Other places of the world, such as the Cappadocia region of Turkey and the Petra site in Jordan, have similar constructions and are two famous places renowned for their amazing rock-cut architecture. Like the churches in Lalibela, these structures present unique conservation and management challenges. Known for its bizarre terrain of cone-shaped rock formations and host to a vast network of underground cities, churches, and monasteries is the Cappadocia region of Turkey. These inventively constructed buildings, which were carved into soft volcanic rocks, have elaborate tunnel systems, ventilation

shafts, and social areas. Jordan's Petra region is home to stunning rock-cut tombs, temples, and facades that are sculpted from sandstone cliffs that are rose in color.

Cappadocia region of Turkey

Cappadocia, located in central Turkey, is home to a unique landscape of volcanic rock formations that have been shaped by erosion over time. The area is particularly renowned for its large network of cave settlements and underground civilizations that were carved out of the pliable volcanic tuff. Since the time of the Hittites, Cappadocia's rock-hewn buildings have served a range of functions, including houses, monasteries, and places of worship (Hazel & Andus, 2006). The Göreme Open Air Museum, a UNESCO World Heritage Site, is one of Cappadocia's most well-known examples of a rock-hewn building. A collection of cave churches and monasteries from the 10th and 11th centuries are on display at the museum. These structures are painted with paintings that depict scenes from the Bible. The site's conservation efforts have concentrated on preserving the frescoes from light and moisture damage, strengthening the rock walls, and restricting public access to lessen wear and strain on the buildings.



Figure 1. Rock-cut homes, Cappadocia, by Author.



Figure 2. Rock-cut Uchisar Castle, Cappadocia, by Author.

Derinkuyu, located in central Anatolia, is a superb illustration of an ancient town constructed in the subsoil. Its spatial range is astounding; he had room for up to 20,000 people. The deepest floor of the complete underground system can reach a depth of 85 m and has up to 18 floors. When either home was rebuilt in 1963, a very recent discovery of this ancient city was made. In 1969, it became open to visitors. Underground areas were utilized up to the 19th century, after which they were abandoned (Nývlt et al., 2016).

The Derinkuyu Underground City, a vast network of tunnels and chambers carved out of the tuff that previously provided shelter for locals during times of conflict and persecution, is another noteworthy location in Cappadocia. At Derinkuyu, conservation efforts have been concentrated on stabilizing the rock walls, repairing damage brought on by earthquakes and water penetration, and safeguarding the location from looting and vandalism.

Petra region of Jordan

Another well-known location for constructions carved out of rock is Petra, which is situated in southern Jordan. The city, which the Nabataeans constructed out of sandstone cliffs in the fourth century BCE, was a significant Silk Road commerce center. Petra was included on four successive World Monuments Fund lists of the most endangered sites in the world (in 1996, 1998, 2000, and 2002) due to the fact that both natural and anthropogenic effects are increasingly endangering its integrity and it is exceedingly fragile. (UNESCO, 2012). Figures 3 and 4 are pictorial representations of parts of Petra region in Jordan. The Treasury, a temple carved onto a high cliff face, is the most well-known building in Petra. The delicate sandstone cliffs of Petra have been stabilized, the area has been protected from weathering and erosion, and visitor access has been controlled to reduce harm to the structures. Installing a system of canals and basins to collect rainwater and stop runoff-related erosion was one significant Petra project.



Figure 3. Facade of the treasury (khazneh), photo obtained from: Burak, J. (2015 Oct 15).



Figure 4. Theater, photo obtained from: Burak, J. (2015 Oct 15).

Study area

Background Information on Lalibela

Lalibela is a town in northern Ethiopia's Amhara region, about 260 kilometers from Addis Ababa,

the nation's capital. The town is famed for its monolithic churches that were carved out of rock and were constructed in the 12th century under the rule of King Lalibela.



Figure 5. The location of Lalibela in Ethiopia, (Al Jazeera, 2021)

One of the world's greatest architectural wonders is thought to be the churches of Lalibela, which were hewn out of solid rock. There are a total of 11 churches, each with a distinctive architectural style and spiritual value. A network of tunnels and trenches that the priests and worshippers utilized as a means of transportation connects the churches. Lalibela's churches are viewed as a representation of Ethiopia's extensive cultural and religious history. They also serve as a tribute to the resourcefulness and inventiveness of the individuals who constructed them using only rudimentary equipment and their bare hands. The churches of Lalibela were designated a UNESCO World Heritage Site in 1978 in recognition of their historical and cultural importance.

The Rock-Hewn Churches of Lalibela

The village of Lalibela in northern Ethiopia is home to a collection of 11 monolithic churches known as the Rock-hewn churches of Lalibela. The churches, which were constructed in the 12th century under the rule of King Lalibela, are regarded as one of the seven wonders of the world. Each church has a distinctive design and a special religious meaning. They were cut out of solid rock. A network of tunnels and trenches that the priests and worshippers utilized as a means of transportation connects the churches. (UNESCO, 2023).

- *Some churches from the north cluster of Lalibella*



Figure 6. Bet Medhane Alem (House of the Saviour of the World), (Brilliant Ethiopia1, 2021)



Figure 7. Bet Maryam (House of Mary), photo obtained from: (Brilliant Ethiopia1, 2021)



Figure 8. Bet Golgotha and Mikael, photo obtained from: (Brilliant Ethiopia1, 2021)

The Lalibela rock-hewn churches are evidence of the ingenuity and inventiveness of those who constructed them. The only equipment and methods used to build the churches were chisels and hammers. The architects of the cathedrals were able to cut beautiful architectural details from the rock that are still highly regarded today. Both religious and cultural values may be found in the rock-hewn churches of Lalibela. For the Ethiopian Orthodox Church, the churches are a significant place of pilgrimage, and thousands of people travel there each year to participate in religious festivals and festivities. The churches are a source of national pride and a representation of Ethiopia's rich cultural heritage. (UNESCO, 2023). The Lalibela rock-hewn churches were designated a UNESCO World Heritage Site in 1978 in recognition of their historical and

cultural importance. The churches are referred to as "a remarkable testimony to the architectural and engineering skills of the ancient Ethiopians" by the UNESCO World Heritage Centre, who also says that they "are outstanding examples of a unique form of religious architecture." (UNESCO, 2021) The Lalibela rock-hewn chapels still draw tourists from all over the world today. The churches are well-liked tourist attractions, and tourists flock there to take in the magnificent architecture and discover more about Ethiopia's fascinating history and culture. The town of Lalibela has a strong tourist economy, with hotels, eateries, and gift shops attracting tourists.

- *Some churches from the south cluster of Lalibella*



Figure 9. Bet Gabriel Raphael (House of Gabriel Raphael), obtained from: (Brilliant Ethiopia1, 2021)



Figure 10. Bet Abba Libanos (House of Abbot Libanos) and Bet Leham, obtained from: (Brilliant Ethiopia1, 2021)



Figure 10. Bet Emanuel (house of Emmanuel), obtained from: (Brilliant Ethiopia1, 2021)

Methodology

In this study, data from published works are gathered using the qualitative research approach. Reports, journals, and papers on related topics served as the foundation for the literature used. This approach can be used because the study's goal is to shed light on practical conservation measures that can guarantee the survival of the rock-hewn churches for the coming generations. Information was readily available online via online libraries, it was possible to get articles covering the history, conservation assessment, and documentation from previously written publications.

Results and Discussion

Considering the history behind the structures and their cultural context is a vital part of historic conservation, which involves preservation. Preserving historic buildings is vital to understanding a nation's heritage. In the case of the Rock-Hewn churches, which started out being a little Jerusalem for African Christians went on to start a new age of growth for Ethiopians.

The conservation of the Lalibela rock-hewn

churches is a complex process that calls for a combination of technical, social, and cultural factors. The process of architectural conservation for the churches includes a few actions intended to preserve both the structural integrity of the buildings and their cultural relevance.

- **Stability and preservation** of the rock surfaces and structures is one of the main ways of architectural conservation for the rock-hewn churches of Lalibela. This entails locating rock regions that are unstable or that have accumulated damage over time and applying the proper conservation treatments to stabilize and safeguard these regions. The application of mechanical or chemical techniques to strengthen the rock is one of these treatments, as is the placement of safety barriers to stop additional harm. (ICOMOS, 1964)
- **Management of visitors' access and use** is a crucial component of architectural conservation for churches. A large number of visitors to the churches might cause serious damage to the buildings and the surroundings. Conservation efforts may concentrate on the creation of visitor management strategies, including the designation of designated pathways, the

installation of protective barriers, and other steps to lessen the impact of visitors on the structures to reduce this damage. (UNESCO World Heritage Center, 2021)

- **The development of proper conservation rules and practices** is another aspect of maintaining the Lalibela rock-hewn churches. This could entail the creation of policies and rules for the administration and preservation of the churches as well as the creation of educational initiatives for both residents and professionals working in the field of conservation. It might also entail creating outreach and educational initiatives meant to spread knowledge about the value of churches and their cultural relevance. (UNESCO World Heritage Center, 2021)
- **Involving local communities** in conservation efforts is crucial to ensuring the long-term viability of conservation efforts. This can be done by creating community-based conservation initiatives that work with residents to design, carry out, and monitor conservation efforts. This strategy can promote a sense of ownership and responsibility for the preservation of the churches as well as aid in increasing local capacity for conservation activities. (ICOMOS, 1983)

Significant Values for Their Conservation

The religious, historical, and cultural significance of Lalibela's rock-hewn churches makes their preservation crucial. These values consist of:

- **Cultural value:** The rock-hewn cathedrals of Lalibela are outstanding examples of Ethiopia's architectural legacy, which has evolved over centuries and displays a special synthesis of indigenous and foreign influences. The elaborate carvings and decorations on the churches, which represent the aesthetic and cultural heritage of the area, are highly noteworthy. For this cultural treasure to be preserved for future generations, these structures must be conserved.
- **Historical value:** It is thought that King Lalibela ordered the construction of the rock-hewn churches in Lalibela in the 12th century. They are important as a representation of Ethiopia's medieval civilization as well as a tribute to the creativity and technical know-how of the builders. The preservation of these buildings is crucial for maintaining this significant portion of Ethiopia's heritage.

- **Religious value:** The Lalibela rock-hewn churches are revered by the local populace and are significant places of pilgrimage for the Ethiopian Orthodox Church. Numerous pilgrims visit them annually as they are thought to be the earthly representation of the New Jerusalem. The preservation of these buildings is crucial for upholding the site's religious significance and its status as a place of worship.
- **Touristic value:** The Rock-hewn churches of Lalibela are one of Ethiopia's most important tourist attractions and are visited by thousands of people from around the world each year. The conservation of these structures is important for preserving their tourism value and ensuring that they continue to attract visitors and contribute to the local economy.

Cultural significance

The rock-hewn chapels of Lalibela are highly revered across Ethiopia and the rest of the world. These cathedrals are regarded as UNESCO World Heritage sites and are among the most significant historical and cultural monuments in Ethiopia. The churches, which were built in the 12th and 13th centuries, are renowned for their distinctive architectural style, which includes fine carvings and frescoes carved straight into the live rock. The Rock-hewn churches of Lalibela should be preserved for their historical relevance in addition to their spiritual and religious importance. The churches shed light on Ethiopia's medieval religious and cultural traditions as well as the period's engineering and architectural techniques. Therefore, preserving these churches is crucial for the historical and cultural heritage of Ethiopia, as well as for the education and appreciation of coming generations. Beyond their religious and historical significance, Lalibela's rock-hewn churches have a significant cultural impact. Additionally, these churches are a significant representation of Ethiopia's history and culture. They stand for inventiveness, creativity, steadfast faith, and devotion to the cultural traditions of the people who built them. Therefore, it is crucial that these churches are preserved if Ethiopia's rich cultural heritage is to be recognized and respected both domestically and internationally.

Conclusions

An interdisciplinary endeavor called architectural conservation aims to sustain the historical relevance, artistic value, and functioning of existing structures. A unique

UNESCO World Heritage Site in Ethiopia, the rock-hewn churches of Lalibela are an exceptional example of religious construction. However, there are serious conservation issues at the site that demand quick action. A thorough and multidisciplinary approach to architectural restoration is necessary to preserve the preservation of the historical, cultural, and architectural relevance of the rock-hewn churches of Lalibela. This strategy ought to consider the difficulties these structures present. These landmark structures can be preserved for present and future generations to admire and enjoy by carrying out rigorous assessments, putting suitable conservation measures in place, and adopting ecologically friendly activities.

Effective conservation plans should also take the local community's socioeconomic conditions into account. A sense of ownership and responsibility can be fostered by involving the community and spreading knowledge of the value of maintaining cultural property, which will result in more sustainable conservation techniques. Collaboration with international organizations and the creation of specialized conservation funds may also be able to offer crucial assistance for ongoing upkeep and restoration projects. We can guarantee the long-term survival of these important historic sites by employing a diverse and adaptive strategy to the conservation of the rock-hewn churches of Lalibela and comparable architectural marvels. We can preserve these remarkable rock-hewn monuments' historical and cultural significance while also preserving their breathtaking beauty and spiritual heritage for future generations to enjoy.

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