



The multi-criterial beauty of ancient buildings in Jordan

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ABSTRACT:

The architectural heritage of Jordan is a testament to the ingenuity and artistic excellence of past civilizations. Evaluating these ancient structures requires a multi-criterial approach, considering their aesthetic beauty, engineering ingenuity, historical significance, and environmental harmony. These buildings, from the rock-carved wonders of Petra to the grand Roman city of Jerash, showcase both visible and hidden beauty – blending artistic craftsmanship with functional design and sustainable practices. Aesthetic excellence is evident in the intricate carvings, balanced proportions, and the seamless integration of architecture with the natural surroundings. Engineering achievements, such as Petra's advanced water management system and the precise acoustics of Roman amphitheaters, demonstrate the technical expertise of ancient builders. Beyond their physical form, these structures hold deep historical and cultural significance, preserving the stories, traditions, and innovations of past societies. Additionally, their harmonization with the environment highlights early sustainability principles, such as the use of local materials and climate-adaptive designs. By understanding and preserving these architectural marvels, we ensure that future generations inherit not only physical monuments but also the values they represent. Their enduring beauty and resilience provide valuable lessons for modern architecture, emphasizing the importance of balancing cultural heritage with sustainable development. This study highlights the necessity of protecting Jordan's ancient buildings while drawing inspiration from their design principles to guide future architectural progress.

KEYWORDS:

ancient buildings; architectural heritage; cultural and historical landmarks; architectural excellence; aesthetic; structural resilience; historical narratives; symbolism; harmony

1. Introduction

Evaluating architectural objects requires more than just an appreciation of their outward appearance. A multi-criterial evaluation is a method that considers several factors to assess the true value of a structure, taking into account not only its aesthetic appeal but also its engineering, historical significance, and environmental impact. This approach allows for a deeper understanding of architecture, recognizing both visible and hidden qualities that contribute to a building's lasting importance. One of the key criteria is aesthetic beauty, which includes the harmony of proportions, intricate details, and artistic craftsmanship.

However, beauty is not only what meets the eye – it is also found in how a structure interacts with its surroundings, light, and human experience. Another important factor is engineering and structural ingenuity, which examines the durability, functionality, and construction techniques used to ensure the building's stability over time [1]. The historical and cultural value of an architectural object reflects its role in shaping civilizations, preserving traditions, and serving as a testament to human creativity. Lastly, environmental integration considers how well a building

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blends with its natural surroundings, its use of local materials, and its alignment with sustainable development principles.

By applying this multi-criterial evaluation to Jordan's ancient buildings, we can appreciate not only their artistic and structural brilliance but also their deeper meaning and contribution to history. These architectural marvels serve as both cultural treasures and sources of inspiration for future generations, demonstrating how the past can inform sustainable and innovative design in the modern world.

2. Symbolism and spiritual influence: Architecture as a reflection of beliefs and identity

Architectural beauty is not only defined by aesthetics and engineering but also by the symbolism embedded in its design. Jordan's ancient structures reflect the beliefs, traditions, and cultural identity of the civilizations that built them. Many of these buildings were designed with spiritual and philosophical principles in mind, creating spaces that inspire awe and a sense of connection to the divine.

Petra, for example, was more than just a commercial hub; its temples and tombs were carefully carved into the rose-red cliffs to reflect the Nabataean's spiritual beliefs. The Monastery (Ad-Deir) and the High Place of Sacrifice illustrate how architecture was used for religious ceremonies and community gatherings, reinforcing a shared cultural identity. The early Islamic desert castles, such as Qasr Amra and Qasr Kharana, contain symbolic frescoes and intricate geometric patterns that reflect both artistic expression and religious influences and the spiritual significance of architecture is also evident in the Byzantine and early Islamic periods.

The Church of St. George in Madaba, known for its famous mosaic map (Fig. 1) demonstrates how religious structures preserved and conveyed knowledge. Meanwhile, the mosques of Amman and the Umayyad Palace in the Amman Citadel showcase how Islamic architecture merged functionality with spiritual and artistic ideals. Understanding the symbolic and spiritual role of these buildings allows future generations to appreciate their deeper meanings [2].



Fig. 1. The Church of St. George – mosaic map (December 2024 EmaRoroOnTheRoad)

As modern architecture advances, it can draw inspiration from the past by designing spaces that foster cultural identity, community interaction, and spiritual connection while adhering to sustainable and ethical principles.

3. Aesthetic and architectural excellence: Visible and hidden beauty

The beauty of Jordan's ancient buildings is evident in their striking facades, intricate carvings, and harmonious proportions, but there is also a deeper, hidden beauty that lies in the thoughtfulness of their design and the cultural narratives they embody. The visible splendor of Petra's

Al-Khazneh and Ad-Deir, with their grand symmetrical facades and elaborate Hellenistic influences, immediately captivates the viewer. However, beyond their visual appeal, these structures reflect an advanced understanding of space, light, and artistic symbolism.

Similarly, Jerash's Roman architecture, with its colonnaded streets and massive temples, demonstrates a mastery of balance and proportion. The ruins may seem static, but they once formed a vibrant city where aesthetics and function coexisted in perfect harmony. Umm Qais, with its basalt amphitheater and panoramic views, showcases how architecture can merge with its natural surroundings to create a site of both artistic and experiential beauty. Recognizing and preserving both the visible and hidden beauty of these architectural wonders is essential for future generations.

They serve as a testament to human creativity and the ability to construct environments that are not only functional but also deeply inspiring. By passing down the knowledge of these design principles, we ensure that contemporary architecture continues to embrace artistic integrity while adapting to modern needs [3].

The symmetrical facades, detailed reliefs, and monumental scale of these buildings highlight the advanced artistic sensibilities of the Nabataeans. Another example is the Roman city of Jerash, one of the best-preserved Greco-Roman cities in the world (Fig. 2). Its grand colonnaded streets, the Oval Plaza, the Temple of Artemis, and the South Theater reflect the Roman ideals of proportion, symmetry, and urban planning [4]. Similarly, Umm Qais (ancient Gadara), with its black basalt columns and amphitheater, showcases a unique blend of Roman and local architectural styles, adding to the diverse aesthetic appeal of Jordan's ancient heritage [5].



Fig. 2. Oval Plaza at Roman Ruins at Jerash (17 Oct. 2019 Khouri, Rami G.)

4. Harmonization with nature: Sustainable development inspired by the past

A unique feature of Jordan's ancient buildings is their seamless integration with the natural landscape.

Jordan's ancient buildings demonstrate a profound respect for nature, blending seamlessly into their surroundings rather than overpowering them. Petra's rock-hewn structures are an excellent example of architecture adapted to the landscape, using natural stone formations to create monumental beauty (Fig. 3). The color of the sandstone shifts throughout the day, adding a dynamic, living element to the city's aesthetic [6].

Desert castles like Qasr Kharana were constructed with locally sourced materials that naturally regulated indoor temperatures, providing an early model of sustainable climate control (Fig. 4). Meanwhile, the elevated positions of Karak Castle (Fig. 5) and Ajloun Castle not only

served defensive purposes but also maximized airflow and visibility, reducing the need for artificial modifications to the terrain [7, 8].

Modern architecture must take inspiration from these historical examples, prioritizing designs that coexist with the environment rather than disrupt it. As the world advances, sustainable development should not mean erasing the past but learning from it – using local materials, designing energy-efficient buildings, and planning urban spaces that preserve cultural identity while addressing contemporary needs.



Fig. 3. Petra – Al-Khazneh (Il Tesoro) (January 1, 2015, Mauro Gambini)



Fig. 4. Courtyard of Qasr Kharana, Jordan (14 May 2009, Daniel Case)



Fig. 5. Al Karak castle in Jordan (April 2010, Teo Blancato)

5. Engineering ingenuity and structural harmony: A balance between strength and sustainability

The durability of Jordan's ancient buildings is not just a result of strong materials but also of intelligent engineering that harmonized with the natural landscape. Petra's advanced water management system, which included cisterns, aqueducts, and rock-cut reservoirs, represents an early model of sustainable infrastructure.

Beyond the visual appeal, the structural design of Jordan's ancient buildings demonstrates remarkable engineering ingenuity. Petra's water management system is a striking example of this. The Nabataeans developed an advanced network of cisterns, channels, and aqueducts to sustain their city in the arid desert, demonstrating their deep understanding of hydrology and urban planning [9].

The Roman amphitheaters in Jerash, Amman, and Umm Qais were designed with precise acoustics and audience visibility in mind (Fig. 6). These theaters, constructed using local limestone and basalt, remain structurally sound despite centuries of exposure to environmental and seismic forces [10]. Another example is Karak Castle, a Crusader fortress strategically built with thick walls and underground tunnels to withstand attacks and provide stability in a mountainous landscape [11]. Jerash faces growing developmental pressures due to socioeconomic challenges and population growth, leading to urban deterioration and declining living conditions. The city balances its rich Roman archaeological heritage with Arab and Palestinian cultural influences (Fig. 6).



Fig. 6. Hadrian's Gate, Jerash (April 2024, O. Jawabreh)

Efforts to modernize Jerash, through urban development initiatives, focus on integrating historical sites with contemporary planning while addressing social needs. However, expansion often occurs without preserving the historic fabric, creating technical and environmental challenges. Tourism and trade revolve around the archaeological sites, while residential areas struggle. Despite ongoing research and development programs, a cohesive and effective urban strategy remains difficult to achieve [12].

This hidden ingenuity allowed the city to thrive in an arid climate, demonstrating how architecture can be both resilient and environmentally conscious. Roman theaters in Jerash, Amman, and Umm Qais (Fig. 7) were designed with precise acoustics and tiered seating that maximized the audience's experience while ensuring structural stability. These amphitheaters, still in use today for cultural events, highlight the enduring strength of well-planned architecture. Karak Castle and Ajloun Castle, built on strategic hilltops, exemplify military engineering that not only provided defense but also integrated natural rock formations into their construction, minimizing environmental impact.

Modern architectural development should learn from these examples, ensuring that new structures prioritize both longevity and ecological balance. By studying ancient techniques that promoted sustainability – such as using local materials, optimizing natural ventilation, and designing for climate resilience – we can create a built environment that respects both history and the planet’s future.



Fig. 7. Umm Qais Amphitheater, Jordan Stock Photo – Alamy (8 September 2014)

6. Historical and cultural significance: A legacy to protect and share

Beyond their physical form, Jordan’s ancient buildings carry profound historical and cultural meaning. Petra was not just a city; it was a thriving trade hub that connected cultures from Arabia, Egypt, and the Mediterranean. Every carved facade tells a story of artistic exchange and economic prosperity. Likewise, Jerash preserves the legacy of Greco-Roman urban planning, reflecting a civilization that valued public spaces, forums, and cultural life.

The historical and cultural depth of Jordan’s ancient buildings adds another layer to their beauty. Each structure represents a different era, offering insights into the civilizations that once thrived in the region. Petra was a major trading hub, linking Arabia, Egypt, and the Mediterranean, and its buildings reflect this cross-cultural exchange [13].

Jerash, known as one of the Decapolis cities, illustrates the extent of Roman influence in the region, with its temples, baths, and theaters reflecting Roman civic and religious life [14]. The early Islamic period also left a significant architectural legacy, particularly in the form of desert castles. Qasr Amra, a UNESCO World Heritage Site, is adorned with elaborate frescoes depicting hunting scenes, celestial motifs, and royal figures, showcasing the artistic achievements of the Umayyad era [15].

Qasr Amra, with its unique frescoes depicting celestial and royal imagery, serves as a rare glimpse into the artistic and intellectual climate of the early Islamic period (Fig. 8). These visual narratives offer more than just aesthetic pleasure – they provide insight into the beliefs, aspirations, and daily lives of past societies.

Ensuring that these historical sites are protected and their stories are passed on is a responsibility we must all uphold; future generations should not only inherit these landmarks as physical structures but also understand their deeper cultural and philosophical significance. Education, tourism, and digital preservation efforts must work together to keep these histories alive while respecting their integrity.

Heritage is the legacy of the past, shaping our present and future. Heritage tourism focuses on exploring a destination’s cultural and historical significance, relying on both tangible and intangible elements. As cultural heritage drives global tourism, creating memorable experiences is essential for attracting visitors and generating revenue.

Heritage buildings preserve cultural identity, offering visitors a journey into the past through unique architecture and immersive experiences. While modern architecture embraces innovation, historical structures are maintained through preservation and restoration. Jordan's desert palaces and Umayyad-era bathhouses exemplify this, as does Petra, where local materials reflect its heritage [16].



Fig. 8. Jordan – Exploring Qasr Amra Frescoes and the Desert Castle Loop (Chris travel blog CTB)

Blending historical influences with modern design creates distinctive spaces rooted in socio-cultural and environmental contexts. Using regional materials and traditional craftsmanship helps maintain authenticity while meeting contemporary needs. “Building culture” is more than design – it ensures historical connections are preserved while embracing modern innovation (Fig. 9).



Fig. 9. Bubble camps (left), The Treasury (right) November 18, 2023 by Lindsay Nieminen

7. Conclusions

Jordan's ancient buildings stand as enduring symbols of artistic mastery, structural brilliance, and cultural identity. Their beauty is not limited to what is immediately visible; it is also found in the careful planning, engineering ingenuity, and deep historical narratives they carry.

A multi-criterial evaluation reveals how these structures blend aesthetics, functionality, and environmental awareness in ways that remain relevant today. As the world continues to develop, it is essential to balance modernization with heritage preservation.

The sustainable principles embedded in these ancient designs – such as climate adaptation, efficient resource use, and integration with nature – offer valuable insights for contemporary architecture.

By safeguarding these sites and incorporating their lessons into modern design, we ensure that future generations inherit not only remarkable buildings but also the knowledge and values that shaped them. Preserving Jordan's architectural heritage is not just about protecting the past; it is about using history as a guide to build a more sustainable and culturally rich future.

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Comment: The architectural treasures of Jordan are more than just ancient ruins – they are living representations of human creativity, resilience, and innovation. By evaluating them through multiple criteria, we can better understand the depth of their beauty and importance. These structures not only connect us to the past but also offer valuable lessons for the present and future, particularly in sustainable design and cultural preservation. It is crucial that we continue to study, protect, and learn from them, ensuring that their legacy remains a source of inspiration for generations to come.

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Wielokryterialne piękno starożytnych budowli Jordanii

STRESZCZENIE:

Dziedzictwo architektoniczne Jordanii stanowi świadectwo pomysłowości oraz artystycznej doskonałości dawnych cywilizacji. Ocena tych starożytnych struktur wymaga podejścia wielokryterialnego, uwzględniającego ich walory estetyczne, kunszt inżynieryjny, znaczenie historyczne oraz harmonię z otoczeniem. Budowle te – od wykutych w skale cudów Petry po monumentalne rzymskie miasto Dżerasz – ukazują zarówno piękno widoczne, jak i ukryte, łącząc artyzm rzemiosła z funkcjonalnym projektowaniem i zasadami zrównoważonego rozwoju. Doskonałość estetyczna przejawia się w misternych zdobieniach, harmonijnych proporcjach oraz płynnym zespoleniu architektury z krajobrazem naturalnym. Osiągnięcia inżynieryjne, takie jak zaawansowany system gospodarki wodnej Petry czy precyzyjna akustyka rzymskich amfiteatrów, świadczą o wysokich kompetencjach technicznych dawnych budowniczych. Poza formą materialną obiekty te niosą głębokie znaczenie historyczne i kulturowe, zachowując opowieści, tradycje i innowacje minionych społeczeństw. Ponadto ich harmonizacja ze środowiskiem podkreśla wczesne zasady zrównoważonego budownictwa, takie jak wykorzystanie lokalnych materiałów oraz projektowanie dostosowane do warunków klimatycznych. Zrozumienie i ochrona tych architektonicznych arcydzieł pozwala zapewnić przyszłym pokoleniom nie tylko materialne zabytki, lecz także wartości, które one reprezentują. Ich trwałe piękno i odporność dostarczają cennych lekcji dla współczesnej architektury, akcentując znaczenie równowagi między dziedzictwem kulturowym a zrównoważonym rozwojem. Niniejsze opracowanie podkreśla konieczność ochrony starożytnych budowli Jordanii oraz czerpania inspiracji z ich zasad projektowych w celu ukierunkowania przyszłego rozwoju architektury.

SŁOWA KLUCZOWE:

starożytne budowle; dziedzictwo architektoniczne; zabytki kulturowe i historyczne; doskonałość architektoniczna; estetyka; odporność konstrukcyjna; narracje historyczne; symbolika; harmonia