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THE PRACTICE OF DESIGNING LANDSCAPE URBAN ENVIRONMENTS IN MOROCCO

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Abstract. Moroccan urban design is a rich tapestry, blending traditional architectural wisdom with modern innovations. At the heart of this architectural tradition is the riad, a traditional Moroccan dwelling characterized by its inward-focused courtyard design. Riads function not only as practical homes but also as reflections of Moroccan culture, values, and environmental adaptation strategies. This article explores the historical and contemporary significance of riads, emphasizing their unique ability to harmonize cultural heritage with sustainability. The study examines key elements such as the use of courtyards for climate regulation, the aesthetic and structural importance of materials like tadelakt and zellige, and the strategic incorporation of greenery and water features for cooling. Furthermore, the evolution of riads into modern urban spaces is analyzed, showcasing how these traditional designs adapt to contemporary demands for leisure, hospitality, and multicultural interactions. Through detailed analysis and visual illustrations, the article investigates how Moroccan urban design principles—rooted in Islamic traditions and local craftsmanship—offer solutions to the pressing challenges posed by hot climates. It also considers the global applicability of these principles, emphasizing the importance of sustainable urban development that balances functionality, aesthetics, and cultural identity. This research aims to highlight the timeless relevance of Moroccan architectural practices within the broader discourse of sustainable urban landscapes and climate-responsive design.

Keywords. Landscape Urban Design, Climate-Responsive Architecture, Sustainable Urban Planning, Urban Landscape in Hot Climates, Moroccan Urban Design, Traditional and Modern Architecture, Cultural Heritage in Urban Planning, Public Spaces and Architecture

Introduction.

Formulation of the Problem. This article identifies the key challenges and objectives in addressing these issues:

- Preserving cultural and architectural heritage in the face of modernization and globalization.
- Adapting traditional riad designs to contemporary urban needs while maintaining their functionality and aesthetic appeal.
- Mitigating the effects of extreme heat and arid climates through sustainable architectural practices.
- Balancing the demands of tourism-driven modernization with the authenticity of Moroccan urban identity.
- Integrating innovative solutions into traditional designs to ensure environmental and cultural sustainability.

Materials and Research Methods. This research employs a multidisciplinary approach to examine the evolution and role of Moroccan riads in urban landscape design. The study integrates architectural analysis, cultural history, and sustainability practices to provide a comprehensive understanding of riads' significance. Seminal works, such as Abu-Lughod's analysis of spatial and socio-political divisions in Rabat



[1] and Ruggles' exploration of Islamic gardens as multifunctional ecological spaces [8], form the theoretical foundation of this study. These sources offer insights into how riads serve as both functional and symbolic elements of Moroccan architecture.

Field observations of iconic sites, such as the Andalusian Gardens in Rabat, highlight how these spaces reflect the interplay of Mediterranean and Islamic design principles [2]. Similarly, the terraced gardens of the Atlas Mountains illustrate the adaptation of architecture to challenging topography, showcasing a deep understanding of environmental integration [3]. Visual materials, including architectural diagrams and photographs, complement these observations, providing detailed insights into spatial organization, materiality, and the climatic strategies embedded within riad designs. The comparative analysis of traditional and modern riads also sheds light on how these structures evolve to meet contemporary urban needs while preserving their cultural and environmental essence [6][9].

Analysis of Recent Research Sources and Publications. Recent studies emphasize the enduring architectural and cultural significance of riads in Moroccan urban design. Abu-Lughod (1980) examines the spatial organization of Rabat, illustrating how urban planning reflects socio-political structures and cultural identity within the city [1]. Her work provides foundational insights into how traditional spaces like riads navigate the complexities of modern urbanization. Similarly, Amal Ouf (2001) explores the integration of authenticity in urban design, highlighting the balance between preserving heritage and embracing modernity in Moroccan architecture [7].

Ruggles (2008) delves into the ecological and aesthetic roles of Islamic gardens, drawing parallels to the courtyard-centered design of riads, which function as both cultural and climatic havens [8]. The Andalusian Gardens in Rabat, for example, demonstrate the harmony between functionality and beauty, serving as a key case study for Mediterranean and Islamic design principles [2]. Similarly, terraced gardens in the Atlas Mountains illustrate the adaptability of traditional Moroccan design to diverse geographical and climatic challenges [3].

Research on historical preservation and medinas highlights the intricate relationship between Moroccan architecture and cultural identity [4]. These studies underscore the significance of riads as private sanctuaries that embody Islamic values of privacy, hospitality, and community. Zemni and Bogaert (2009) extend this discourse, examining the influence of globalization on Moroccan urban identity and the transformation of traditional spaces to meet the demands of modern tourism [9].

Despite the depth of existing research, gaps remain in understanding how riads' traditional designs can be adapted to address contemporary challenges, such as climate adaptation, urban densification, and tourism pressures. By bridging these gaps, this article highlights the relevance of Moroccan riads as models of sustainable urban development that harmonize tradition and innovation [5].

Main Text.

The riad is a cornerstone of Moroccan architecture, harmonizing practicality, aesthetics, and cultural values. At its heart is the courtyard, a sanctuary integrating greenery and water features to create a cooling microclimate. Carefully arranged plants, such as orange trees and fragrant jasmine, enhance the sensory experience



while providing shade and improving air quality. Water features like fountains and pools regulate temperatures through evaporative cooling, adding a tranquil ambiance [2][3][8].

The exterior of riads emphasizes privacy, modesty, and functionality. Their plain, windowless facades shield residents from noise and heat, ensure privacy, and maintain social balance by blending affluent and modest homes harmoniously within the urban fabric. In contrast, the interiors feature intricate tilework, carved plaster, and woodwork, reflecting hospitality and Moroccan craftsmanship [4][7].

Materials like tadelakt plaster and zellige tiles enhance both aesthetics and functionality, offering durability and thermal efficiency. These locally sourced materials highlight the sustainability inherent in traditional Moroccan design [5].

The inward-focused layout fosters family unity, introspection, and integration with nature. By minimizing outward displays of wealth, riads promote social cohesion, blending diverse households into a unified urban landscape. This design offers timeless insights into sustainable living practices that remain relevant today [4][8].

Beyond their functional and cultural roles, riads are a testament to Moroccan ingenuity in managing extreme climates while maintaining beauty and comfort. Their design principles are not merely reactive but proactive, anticipating environmental challenges and creating spaces that offer refuge and resilience. By combining craftsmanship with environmental adaptation, riads stand as enduring symbols of how traditional architecture can inform and inspire contemporary approaches to sustainable urban design.

In contemporary Morocco, riads have adapted to modern lifestyles while preserving their cultural essence. Courtyards, central to riad design, have evolved into multifunctional spaces featuring swimming pools, rooftop lounges, and expanded social areas. These additions cater to tourism and urbanization demands, offering luxurious amenities while maintaining the intimate and serene atmosphere characteristic of traditional riads. Rooftop spaces, in particular, have become hubs for relaxation and entertainment, often adorned with shaded seating, gardens, and panoramic city views [6].

Interior layouts now reflect a shift toward multifunctionality, reimagining traditional family spaces for events, dining, and leisure. Some riads blend Moroccan aesthetics with contemporary minimalism, balancing rich traditional patterns with clean, modern designs [9].

Technological advancements enhance both comfort and sustainability in modern riads. Cooling systems, such as ducted air conditioning and evaporative technologies, work alongside traditional passive cooling methods like shaded courtyards and high walls. Advanced water management, including greywater recycling and efficient irrigation, sustains lush courtyards while conserving resources [5]. Solar panels and energy-efficient lighting align with global sustainability goals, minimizing environmental impact while maintaining traditional charm. Modern construction techniques also enhance durability and insulation without compromising visual integrity [5][6].

These innovations highlight the flexibility of Moroccan architecture, blending



tradition with modernity. Modern riads retain their historical identity while addressing contemporary demands, ensuring their relevance as cultural landmarks and functional living spaces in a rapidly evolving world [9].

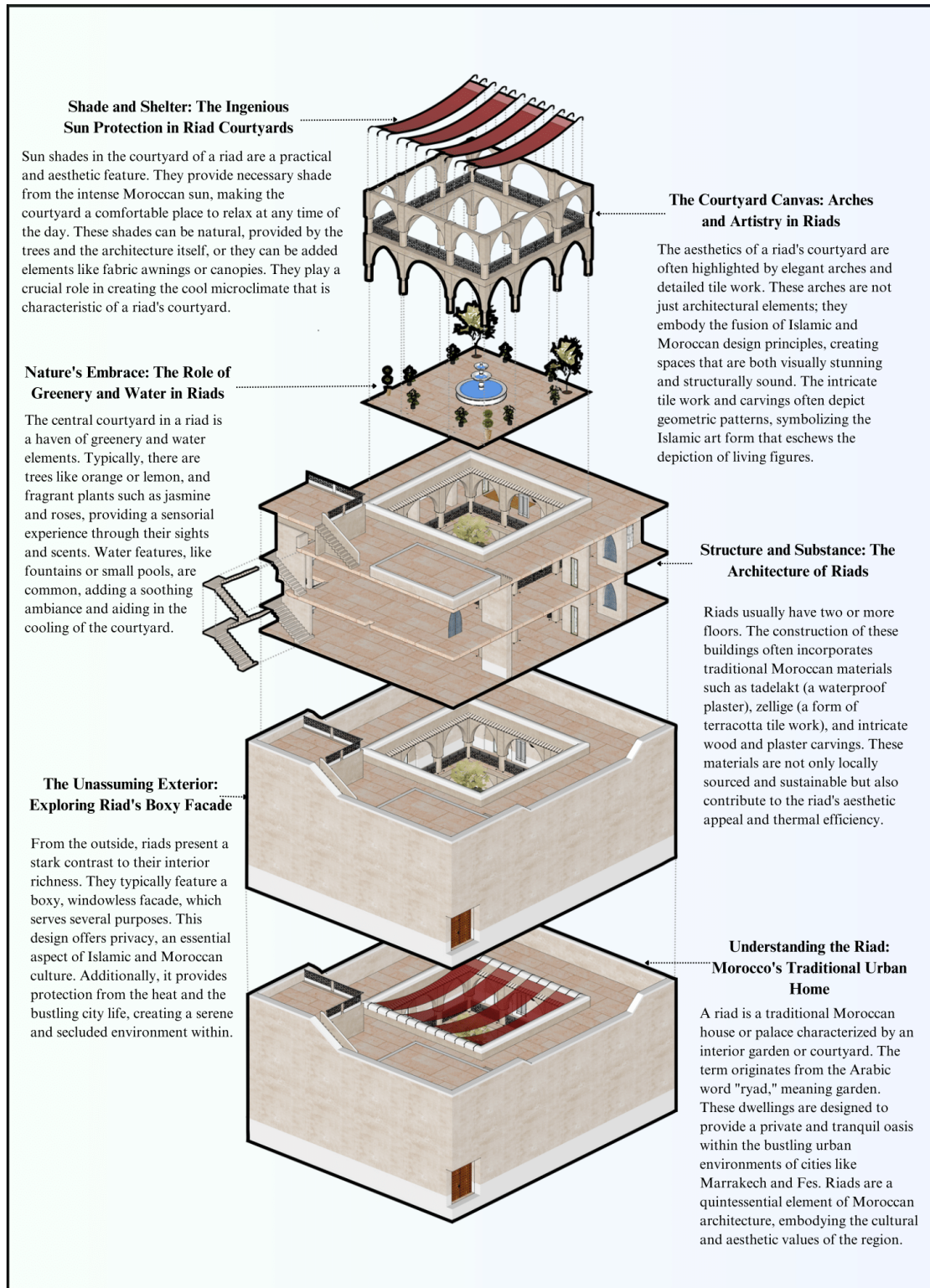


Figure. 1. Hidden Havens, Oasis of Tranquility: Exploring the Architectural and Cultural Wonders of Morocco's Riads

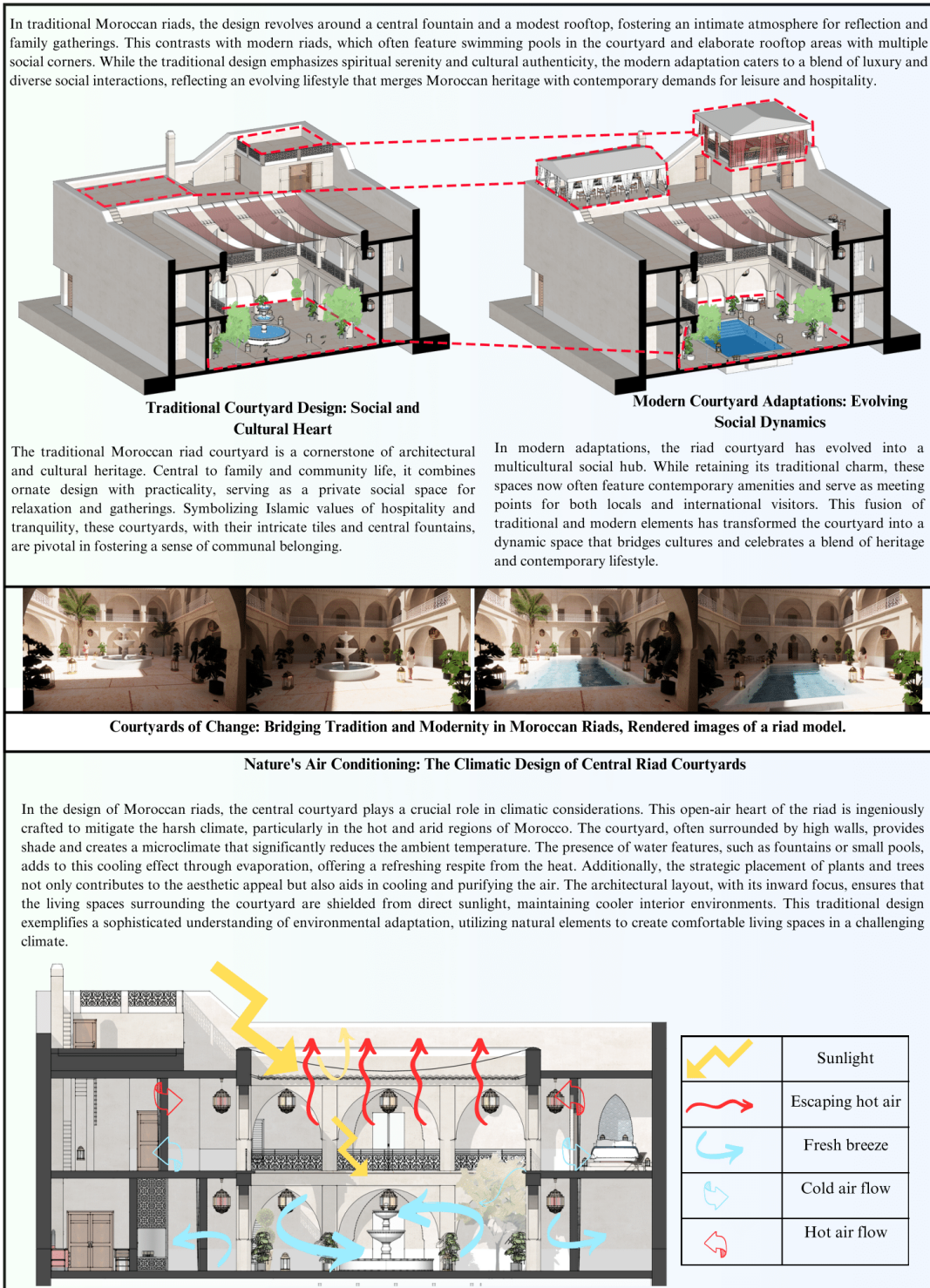
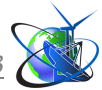


Figure.2. Bridging Eras in Moroccan Riads: Climate-Adaptive Designs from Traditional Courtyards to Modern Social Hubs.

Tourism-Oriented and Sustainable Urban Design. Moroccan cities, particularly Marrakech and Fes, demonstrate how cultural heritage can coexist with sustainable urban development. Riads, many of which are now repurposed as boutique hotels and guesthouses, allow visitors to experience Moroccan architecture firsthand. The preservation of original features, such as intricate woodwork, decorative tiles, and courtyards, ensures these spaces remain authentic representations of Moroccan culture [4][6].



Sustainability is central to both traditional and modern riads. Drought-resistant vegetation reduces water usage while preserving lush greenery, and passive cooling techniques, such as shaded courtyards and evaporative cooling, enhance comfort with minimal energy use. These practices align Moroccan urban design with global sustainability goals [3][8].

Lessons for Global Urban Design

Moroccan urban design provides valuable solutions for hot climates and rapid urbanization. Courtyards act as microclimatic regulators, reducing energy dependency while improving environmental quality and well-being. Locally sourced materials like *Tadelakt* and *Zellige* combine thermal efficiency with aesthetic appeal, exemplifying sustainable practices. The riad's ability to blend tradition and modernity serves as a model for preserving cultural heritage in a globalizing world [5][7][8][9].

Conclusion. Moroccan riads exemplify the seamless blend of tradition, functionality, and sustainability, offering invaluable lessons for urban design in hot climates. Their inward-focused courtyards and use of natural elements demonstrate how architecture can harmonize with nature to create comfortable and sustainable living spaces. Modern adaptations show their flexibility, integrating contemporary amenities while preserving cultural identity and authenticity.

Beyond Morocco, the principles of riad design—passive cooling, natural integration, and locally sourced materials—serve as a blueprint for addressing global climate challenges and preserving cultural heritage. Riads stand as timeless symbols of how tradition and innovation can coexist, guiding urban design toward a more sustainable future.

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