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REVIEW

Vernacular Architecture in the Modern Era: Integrating Traditional Knowledge for Sustainable Buildings

Arquitectura Vernácula en la Era Moderna: Integración de Saberes Tradicionales para Edificaciones Sostenibles

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ABSTRACT

Objective: to describe studies related to the influence of vernacular architecture in modern design, showing how the integration of traditional principles, materials and construction techniques contributes to responding to contemporary challenges such as sustainability, energy efficiency and cultural preservation.
Method: it consisted of an exhaustive review of scientific literature, carried out between August and September 2024. Databases such as Scielo and Google Scholar were consulted, using keywords related to vernacular architecture and modern design, as well as Boolean operators to optimize the search. From 15 initial articles, 4 relevant articles were selected after eliminating duplicates and papers not aligned with the objective.
Results: in various regions, such as Europe and Central America, vernacular architecture provides solutions adapted to the natural environment through the use of local materials, reducing costs and improving energy efficiency. It also highlights its ability to preserve cultural traditions and promote innovation by combining traditional techniques with modern technologies.
Conclusions: vernacular architecture is an essential source of inspiration for modern design, favoring sustainability, functionality and a balance between human beings and their environment, as well as consolidating an authentic and culturally significant heritage.

Keywords: Vernacular Architecture; Modern Design; Traditional Knowledge; Sustainable Buildings.

RESUMEN

Objetivo: describir estudios relacionados a la influencia de la arquitectura vernácula en el diseño moderno, evidenciando cómo la integración de principios, materiales y técnicas constructivas tradicionales contribuye a responder a retos contemporáneos como la sostenibilidad, la eficiencia energética y la preservación cultural.
Método: consistió en una revisión exhaustiva de la literatura científica, realizada entre agosto y septiembre de 2024. Se consultaron bases de datos como Scielo y Google Académico, utilizando palabras clave relacionadas con arquitectura vernácula y diseño moderno, así como operadores booleanos para optimizar la búsqueda. De 15 artículos iniciales se seleccionaron 4 pertinentes tras eliminar duplicados y documentos no alineados con el objetivo.
Resultados: en diversas regiones, como Europa y Centroamérica, la arquitectura vernácula aporta soluciones adaptadas al entorno natural mediante el uso de materiales locales, reduciendo costos y mejorando la eficiencia energética. Se destaca también su capacidad para preservar tradiciones culturales y promover la innovación al combinar técnicas tradicionales con tecnologías modernas.
Conclusiones: la arquitectura vernácula es una fuente esencial de inspiración para el diseño moderno, favoreciendo la sostenibilidad, la funcionalidad y un equilibrio entre el ser humano y su entorno, además de consolidar un patrimonio auténtico y culturalmente significativo.

Palabras clave: Arquitectura Vernácula; Diseño Moderno; Saberes Tradicionales; Edificaciones Sostenibles.

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INTRODUCTION

Vernacular architecture is defined as a tangible cultural expression of a community, materialized in its buildings and reflecting its traditions, values, and ways of life. Unlike formal architecture, which is oriented towards specific styles and techniques, vernacular architecture stands out for its ability to adapt to local environmental and social conditions, using indigenous materials and construction techniques influenced by prevailing cultural practices.[1]

On the other hand, modern architectural design focuses on functionality, technological innovation, and environmental sustainability. It seeks to develop spaces that effectively respond to society's contemporary demands, balancing technical logic with design creativity.[2]

In this sense, the integration of vernacular architecture into modern design involves the adapted incorporation of traditional construction principles, indigenous materials, and ancestral techniques into contemporary solutions. This approach is based on the accumulated knowledge and seeks to respond to current challenges such as sustainability, energy efficiency, and the preservation of cultural identity. Its essential elements include using local materials, which contribute to reducing costs and the environmental footprint; climate adaptation, which optimizes the thermal and energy performance of buildings; the conservation of cultural heritage; and innovation from combining traditional techniques with emerging technologies.[3]

In the Central American region, vernacular architecture has played a crucial role in modern design, facilitating the preservation of cultural identity by incorporating traditional building elements, thus strengthening the sense of community belonging. It has also allowed architects to adapt their proposals to local climatic conditions through indigenous materials and techniques, promoting sustainable and functional buildings that meet everyday needs and improving interior comfort and energy efficiency.[4] This synergy between tradition and modernity contributes to architectural design that respects the natural and cultural environment, inspiring more responsible and contextualized contemporary solutions.[5]

In the European context, the application of vernacular architecture in contemporary design manifests itself in the use of local materials, which, in addition to optimising costs, improve energy performance by being inherently adapted to regional climatic conditions. This practice promotes the preservation of cultural traditions and fosters innovation through the harmonious combination of traditional building methods and modern technologies, offering solutions that respond to the housing needs of each locality and its natural environment.[6,7]

Finally, in Asia, vernacular architecture integrated with modern design promotes sustainability and cultural conservation, strengthens the local economy, and fosters innovation and adaptation to specific environmental conditions. This holistic and responsible approach is key to contemporary architectural development in the region, demonstrating a commitment to balancing tradition, technology, and the environment.[8]

METHOD

A comprehensive review of the scientific literature was carried out to examine the influence of vernacular architecture on modern design, using the Scielo and Google Scholar databases as sources. The search was optimized by using key terms in Spanish and English, such as 'vernacular architecture,' 'modern design,' "multisensorial," and 'education' (vernacular architecture in modern design), combined using Boolean AND and OR operators. This search process ran from August to September 2024, covering articles published in 2021-2024. Documents in several languages were included, excluding case reports, interviews, letters to the editor, and theses due to their lower empirical relevance.

Initially, 15 potentially relevant articles were identified, of which eight were directly related to vernacular architecture, contemporary design, and related topics, after the elimination of 2 duplicate articles and the exclusion of 2 additional papers for not fitting the objective of the study or for focusing on marginal aspects such as architectural drift, a final corpus of 4 articles relevant to the analysis and discussion in this review was formed.

RESULTS

Table 1. Articles consulted

Author(s)	Title	Year	URL/DOI	Summary
Barturén Carrasco, Yuliana Cecilia	Influence of vernacular architecture on the sustainable housing model in the rural area of Morrope district, 2022	2022	https://hdl.handle.net/20.500.12692/101594	It assessed the influence of vernacular architecture on sustainable housing with 195 participants. The results, analysed with SPSS, showed a high positive correlation (Spearman 0,883) and a contribution of 90,3 % (R^2=0,903), evidencing that vernacular architecture has a significant impact on the sustainability of the rural housing model.
Carlos Ferrufino Martinez	Ernesto de Sola's architecture in El Salvador: from Historicism to Modernity	2022	https://doi.org/10.18537/est.v011.n021.a02	Ernesto de Sola highlights vernacular architecture as key to modern design in El Salvador, integrating local and traditional elements. This approach facilitates environmental and cultural adaptation, allowing contemporary architects to dialogue with the past and create a unique architectural identity representative of Central America.

Lerma Elvira, Carlos, Mas Tomás, M. Ángeles	The Flat Roof in European Architecture	2022	https://riunet.upv.es/handle/10251/180192	Vernacular architecture greatly influenced modern European design, especially flat roofs, which originated in Mediterranean civilisations. During Romanticism and Modernism, it was valued for its authenticity, inspiring works such as Adolf Loos's Scheu House (1912), promoting simplicity, functionality and connection with the environment.
Alejandro Ferreiro	Vivid architecture, iconographic reflections on living branches and walls	2023	https://www.researchgate.net/publication/377845859	In Central America, vernacular architecture, in harmony with the natural environment and the region's own conditions, is a source of inspiration for contemporary design, encouraging an approach that respects both the environment and local cultural traditions.

CONCLUSIONS

Adaptability and energy efficiency: Vernacular architecture demonstrates a high capacity to adapt to local climatic and environmental conditions through the use of locally available materials, which optimises energy efficiency and reduces construction costs. This contributes to sustainable and functional housing solutions that respond to contemporary needs.

Integration of traditional techniques with innovation: The combination of ancestral construction methods with modern technologies allows for innovation without losing cultural identity, promoting buildings that respect the natural environment and improve the comfort and functionality of living spaces.

Cultural preservation and sense of belonging: From an architectural perspective, preserving vernacular elements reinforces cultural heritage and strengthens the sense of belonging of communities, bringing authenticity to modern designs that are implemented in both rural and urban contexts.

Significant contribution to sustainable housing: Quantitative studies show that the incorporation of vernacular principles in residential design has a high correlation with sustainability. In Morrope, for example, vernacular architecture was found to contribute 90,3 % to sustainable housing patterns, demonstrating an optimal fit between humans and their environment.

Vernacular architecture not only offers technical tools to improve efficiency and sustainability, but also implies a heritage and cultural value that is fundamental for contemporary architectural design.

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CONFLICT OF INTEREST

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