

Transformations of the Vernacular Houses of Macedonia in the 19th Century

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Abstract

It is notable that the vernacular houses of 19th-century Macedonia have undergone significant developmental transformations, reflecting a complex interplay of socio-economic, cultural, and technological influences. On this issue, over the past 40 years, extensive documentations have been produced, shedding light on the influences of 19th-century developments on these houses. In this context, this research investigates the nature and extent of these transformations, focusing specifically on traditional village and town houses in Macedonia.

The research employs a qualitative approach. It utilizes data gathering techniques such as a literature survey, observations of transformations, photographic surveys, documentations, and interviews. It produces a comprehensive understanding of the changes that have occurred in Macedonian vernacular houses by triangulating data generated from these methods.

The findings indicate that the developmental changes are closely linked to advancements in building materials and construction techniques. The paper thus concludes that the traditional Macedonian village and town houses are undergoing notable changes, driven by factors such as urbanization, globalization, and shifts in cultural norms. These transformations pose challenges to the preservation of cultural heritage and underscore the need for innovative approaches to architectural conservation and urban development.

Keywords: Cultural changes, Spatial concept, Local traditions, House, Building materials, Architectural evolution, Historical research.

Introduction

The study of vernacular architecture offers a rich tapestry of cultural, historical, and social insights into the ways in which communities adapt their built environments to their needs and resources. Vernacular architecture, characterized by its use of locally available materials

and traditional construction techniques, provides a unique lens through which to understand the interplay between cultural heritage and architectural forms.

Traditional architecture constitutes a profound element of cultural heritage, embodying the intricate interplay of historical, cultural, and environmental determinants. Vernacular architecture, specifically, denotes the indigenous construction methodologies and stylistic expressions that evolve organically within a distinct locale, profoundly shaped by indigenous materials, climatic conditions, cultural mores, and the extant technological milieu. In 19th-century Macedonia, vernacular architecture was markedly influenced by the prevailing socio-economic milieu, entrenched cultural customs, and the historical context of the era. (Oliver, 2007; Pavlovic, 1987).

During the 19th century, Macedonia, then part of the Ottoman Empire, exhibited a confluence of Ottoman and indigenous architectural styles. The traditional Macedonian architecture of this period typically utilized stone or adobe materials and was characterized by distinctive features such as low-pitched roofs, wooden balconies, and elaborate ornamental details (Cipan, 1955). The architectural culture of the region adhered to traditional forms that spanned a broader geographical area, often manifesting as hybrid houses whose specific attributes varied in response to local construction conditions and necessities (Davis, 2006).

Authenticity of traditional Macedonian houses has significantly influenced their development during the 19th century, a crucial period for shaping the aesthetic of the historic urban core. The architectural needs have been driven by the evolving requirements of families, reflecting both contemporary familial demands and the pressures of modernization.

The issue at hand revolves around the evolving nature of Macedonian vernacular architecture, particularly the transformation of traditional village and town houses. This shift raises questions about the preservation of cultural identity, the sustainability of architectural practices, and the impact of modernization on built environments. Understanding these changes is not only essential for preserving cultural heritage but also for informing contemporary architectural practices and urban planning initiatives. In this context, this paper examines the transformations of vernacular architecture in 19th-century Macedonia, identifying how these changes reflect broader socio-economic, cultural, and technological shifts.

The primary aim of this research is to comprehensively examine the transformations occurring in traditional Macedonian architecture during the 19th century and their implications for contemporary architectural discourse and practice. Its objectives are:

1. To analyze the socio-economic, cultural, and technological factors driving the transformations in Macedonian vernacular architecture.
2. To assess the extent and nature of changes observed in traditional village and town houses across different regions of Macedonia.
3. To investigate the hybridization of architectural forms, particularly the emergence of "hybrid houses," and its implications for cultural identity and architectural sustainability.
4. To identify challenges and opportunities for preserving and promoting traditional architectural practices in the face of modernization and globalization.

This research thus contributes to a deeper understanding of the evolving nature of Macedonian vernacular architecture and its significance in contemporary architectural discourse.

Theoretical Framework

The study of vernacular architecture is deeply rooted in understanding the cultural, social, and environmental factors that shape the built environment. Vernacular architecture, often described as the architecture of the people, is characterized by the use of local materials and traditional construction techniques, and it is shaped by the specific needs and lifestyles of the inhabitants. This section critically reviews significant theoretical contributions to the understanding of vernacular architecture, drawing on the works of key scholars and theorists.

In the scholarly works of theorists examining traditional architecture, numerous local characteristics emerge as shaped by environmental and climatic influences (Stojanovski, 2015), construction techniques, utilized materials, and the design of both interior and exterior elements (Kotsani, 2006). These studies highlight the predominance of rural forms in construction and decoration (Namicev, 2009), as well as the development of spatial organization, construction methods, and the typology of houses (Nikoloska, 2003). Theoretical research extensively explores the impact of decorative elements, considering the materials employed and the placement of interior and exterior adornments (Kirovska, 1999), alongside the proportions, dimensions, and anthropometric considerations applied throughout the construction process (Hadjieva Aleksievska, 1983). Boyadjiev (2010) delves into the influence of building materials, decorative motifs, and structural elements, underscoring their foundational role in the evolution of architectural form.

According to Rapoport (1969), vernacular architecture is fundamentally an expression of culture. Rapoport argues that the form and organization of vernacular buildings are influenced by cultural values, social structures, and the lifestyle of the community. This perspective emphasizes that vernacular architecture is not merely about construction techniques or materials but is deeply embedded in the cultural practices and worldviews of the people who create and inhabit these spaces.

Oliver (1997) extends this discussion by highlighting the adaptability of vernacular architecture. In his seminal work, Oliver points out that vernacular buildings are a result of cumulative knowledge passed down through generations, reflecting a dynamic process of adaptation to changing environmental, social, and economic conditions. This adaptability ensures the sustainability and relevance of vernacular architecture over time.

The concept of environmental adaptation is central to the study of vernacular architecture. As Oliver (2007) notes, vernacular buildings are typically designed with a deep understanding of the local climate and geography, resulting in structures that are inherently sustainable. These buildings often employ passive solar design, natural ventilation, and locally sourced materials, minimizing their environmental impact. This ecological sensitivity is a hallmark of vernacular architecture and contrasts sharply with the often resource-intensive practices of modern construction.

Rapoport (1982) further elaborates on the social and economic dimensions of vernacular architecture. He asserts that the built environment is a direct manifestation of the socio-economic conditions of a community. For instance, the size and complexity of vernacular houses can reflect the wealth and social status of the inhabitants. Rapoport also emphasizes the communal nature of vernacular architecture, where construction practices are often collective endeavors that reinforce social cohesion and community identity.

The transformation of vernacular architecture in response to external influences is another critical area of study. As noted by Namicev & Nestoroska (2023), the vernacular architecture of 19th-century Macedonia has experienced significant transformations due to the introduction of new materials and construction techniques from Europe. This blending of traditional and modern elements has resulted in unique architectural forms that still retain their cultural significance. The evolution of vernacular architecture thus reflects a dialogue between tradition and modernity, where new influences are assimilated without losing the essence of the original cultural context.

In conclusion, the study of vernacular architecture offers a rich theoretical landscape that highlights the interplay between culture, environment, and socio-economic factors. The works of Rapoport, Oliver, and others provide foundational perspectives that underscore the significance of vernacular buildings as cultural artifacts and adaptive responses to local conditions. As contemporary challenges such as climate change and globalization continue to impact built environments, the principles derived from vernacular architecture can inform sustainable and culturally sensitive design practices. Future research should continue to explore these dynamics, critically examining how vernacular principles can be integrated into modern architectural discourse.

While the theoretical frameworks provided by scholars like Rapoport and Oliver offer valuable insights into the nature of vernacular architecture, they also invite critical scrutiny. For instance, some critics argue that the focus on cultural determinism can overlook the agency of individuals and communities in shaping their built environments. Furthermore, the romanticization of vernacular architecture as purely sustainable and harmonious can obscure the complex realities of socio-economic inequalities and power dynamics that also influence architectural forms.

Literature Review

Traditional architecture of North Macedonia, as an integral part of the Balkans, has emerged under the Mediterranean influence, specifically the Ottoman residential architecture of the corresponding era. The distinctive attributes of the traditional local architectural form have been extensively studied by numerous scholars, focusing on construction techniques, the genesis of architectural forms, building materials, decoration, spatial organization, and typology. These studies have elucidated the impacts of climate, the environment as a source of building materials, local beliefs regarding architectural form and quality, and the economic and social conditions prevailing during the construction period. The transformation of vernacular architecture is a multifaceted phenomenon influenced by various socio-economic, cultural, and environmental factors. This critical review examines significant previous research on this topic, with a particular focus on studies conducted in Macedonia.

Rapoport (1969) argues that vernacular architecture is primarily shaped by the environmental and cultural context. He suggests that changes in these contexts lead to architectural transformations. Rapoport's framework is essential for understanding the broader forces driving architectural change, emphasizing the interplay between cultural traditions and environmental adaptability.

Oliver (1989) provides a comprehensive analysis of vernacular architecture worldwide, highlighting how local materials and construction techniques are adapted to the cultural and environmental needs of communities. According to Oliver, the persistence and evolution of vernacular forms are closely linked to the social and economic conditions of the people. His work underscores the importance of understanding local contexts in studying architectural transformations.

In the Macedonian context, Cipan (1955) offers an in-depth examination of the old urban architecture of Ohrid. He attributes the architectural transformations in this region to the influence of socio-economic changes and the introduction of new materials and construction techniques. Cipan's study is pivotal in understanding how external influences and local conditions interact to shape architectural forms. Cipan (1978) further explores the development of Macedonian cities in the 19th century, noting that urbanization and economic growth led to significant changes in building practices. He identifies a shift from traditional materials to more modern ones and the introduction of European architectural styles as key factors in the transformation of vernacular architecture in Macedonia.

Grabrijan (1986) examines the transition from old oriental to contemporary European house styles in Macedonia. He highlights the gradual adoption of new architectural elements and construction methods, driven by increasing exposure to European influences and changing socio-economic conditions. According to Grabrijan, this transition reflects broader cultural shifts and the integration of new ideas into traditional practices. Kotcani (2006) provides a comparative analysis of traditional architecture in urban and rural settings in North Macedonia. He notes that while urban areas saw more rapid adoption of new materials and styles, rural areas retained traditional building practices for longer periods. This divergence highlights the impact of socio-economic factors on architectural transformations. Kotcani (2006) employs comparative research to explore the diversity of residential building models, considering construction techniques, materials used, and the design elements in both interior and exterior contexts as pivotal factors.

Krunic (1951) examines the shapes of traditional houses in various Macedonian regions, noting that local variations in architectural forms are influenced by both environmental

factors and cultural traditions. Kronic's work underscores the importance of regional diversity in understanding the transformations of vernacular architecture. A prominent exemplar of vernacular architecture from this era is the Macedonian village and town house. According to Kronic (1951), these houses typically employed local stone or mud bricks, with thick walls providing insulation against both the cold winters and hot summers. The roofs, often constructed from timber beams covered with clay tiles or thatch, were designed to effectively shed rainwater and snow.

Stojanovski (2015) examines the historical period during which the local characteristics of traditional buildings were shaped, emphasizing the influence of climatic conditions, environmental factors, and the traditional values preserved within specific local contexts. Stojanovski (2015) compares traditional urban and rural houses in North Macedonia, noting that socio-economic conditions and cultural practices play a crucial role in shaping architectural transformations. His study highlights the importance of understanding local contexts in analyzing the evolution of vernacular architecture.

Namicev (2009) provides an extensive overview of rural residential forms, focusing on the typology of rural houses within climatic, local, and traditional frameworks. He emphasizes the customs surrounding dwelling construction, which significantly impact the form, choice of materials, construction methods, and decoration.

Namicev and Nestoroska (2023) in their study on house design in the 19th century, highlight the role of socio-economic development and cultural exchanges in driving architectural transformations. They emphasize the impact of urbanization and tourism on the evolution of traditional house forms in North Macedonia. Namicev and Nestoroska (2023) also explore the role of 19th-century urban houses in tourism promotion, noting that the preservation and adaptation of these houses are influenced by their cultural and economic significance. This perspective highlights the intersection of cultural heritage and economic development in architectural transformations. Nikoloska (2003) analyzes traditional urban houses, emphasizing their spatial characteristics and conducting a constructive and typological analysis of their elements. Her work highlights the variety of residential models distinctive to specific regions.

Kirovska (1999) discusses the meaning of decoration in 19th-century Macedonian architecture, linking changes in decorative styles to shifts in cultural values and aesthetic preferences. According to Kirovska, the evolution of decorative elements is a reflection of broader cultural transformations, influenced by increased interaction with European artistic trends. Aleksievska (1985) focuses on the measures of anthropomorphism and modular proportions in the old Macedonian house. She argues that the preservation of certain architectural features despite broader changes indicates a strong cultural attachment to traditional forms. This perspective emphasizes the resilience of cultural identity in the face of modernization. Milenkovic (1953-56) explores examples from the anthropomorphic analysis of residential buildings in Macedonia. He argues that the anthropomorphic proportions found in traditional houses are a manifestation of deeply rooted cultural beliefs and practices, which continue to influence architectural forms even as other aspects of the buildings change.

In rural regions, houses have been typically clustered within tight-knit communities, characterized by narrow streets and courtyards that fostered a sense of intimacy and security. These courtyards served not only functional purposes but also acted as communal spaces for social interaction and agricultural activities. The layout and design of these dwellings were profoundly influenced by the family's social structure and daily routines. For instance, the ground floor commonly accommodated livestock and storage areas, while the upper floors were designated as living quarters. Rooms were usually arranged around a central hearth, which served as the focal point for cooking and heating. Macedonian vernacular architecture featured intricate wood carvings, painted ceilings, and colorful textiles, which not only enhanced aesthetic appeal but also reflected the region's cultural identity and artistic traditions (Namicev, 2009).

According to Kronic (1996), vernacular architecture of the 19th century was characterized by local influences that were prominently evident in the form, construction, material selection, urban context of historical areas, and prevailing historical conditions within

the broader Mediterranean region. Traditional architecture forms a significant part of collective cultural heritage, and it is crucial to identify specific influences that have shaped its development, thus contributing to the identity of architectural forms.

Oliver (2007) discusses cultural issues in vernacular architecture, arguing that the preservation and transformation of traditional forms are closely linked to cultural identity. According to Oliver, the adaptation of vernacular architecture to contemporary needs involves a delicate balance between maintaining cultural heritage and accommodating modern demands.

These studies help in understanding the capacity to develop local vernacular forms and elements of authenticity that contribute to defining national architectural forms. Through comparative analysis of basic characteristics such as house shape evolution, construction techniques, use of materials, decorative details, and factors influencing house transformation, one can identify the elements, factors, and styles that have influenced the evolution of traditional architecture.

The review of previous research highlights the complex interplay of various factors influencing the transformations of vernacular architecture. Studies by Rappoport (1969) and Oliver (1989) provide a foundational understanding of the broader forces at play, while research by Cipan (1955, 1978), Grabrijan (1986), and others offer specific insights into the Macedonian context. The convergence of socio-economic changes, cultural influences, and environmental adaptations emerges as a central theme in these studies, underscoring the multifaceted nature of architectural transformations. This comprehensive review not only situates the current research within the existing literature but also identifies key areas for further investigation in understanding the evolving landscape of vernacular architecture.

Research Methodology

This research employs a qualitative approach, in order to capture the depth and richness of data required to understand the complex nature of vernacular architecture. This approach is essential for exploring the intricate socio-cultural, historical, and economic factors that influence architectural practices. The techniques used include a literature survey, observations of transformations, photographic surveys, documentation, and interviews.

The research process was systematically divided into three distinct phases: preliminary, second, and third phases, each with specific objectives and methodologies tailored to progressively build a comprehensive understanding of the topic.

Preliminary Phase: In the preliminary phase, an extensive literature review was conducted to establish a foundational understanding of the existing body of knowledge on vernacular architecture. Additionally, initial site visits and exploratory observations were undertaken to gain firsthand insights into the architectural features and cultural contexts of the study area.

1. **Literature Survey:** A comprehensive literature survey was conducted to gather a wide range of existing knowledge and theoretical perspectives on vernacular architecture. This involved systematically searching academic databases, libraries, and archives for relevant books, journal articles, and conference papers. The literature survey helped in identifying key themes, historical contexts, and methodological approaches that have been previously applied to the study of 19th-century architecture in Macedonia. This foundational step provided a broad context and informed the subsequent stages of the research.

Second Phase: The second phase of research focused on in-depth data collection through various qualitative methods, including semi-structured interviews with local residents, architects, and historians, as well as participant observation and ethnographic fieldwork. Detailed field notes and visual documentation (photographs and sketches) were gathered to capture the lived experiences and subjective interpretations of individuals closely associated with the vernacular architecture under study. This phase also involved the systematic collection and analysis of archival materials, such as historical maps, building plans, and governmental records, to trace the evolution of architectural forms and practices over time.

1. **Observations of Transformations:** Direct observations were a crucial component of the research methodology. This technique involved systematically observing the physical and functional transformations of vernacular houses over time. Field visits to various historical sites and neighborhoods were conducted to document changes in architectural forms, materials, and spatial organization. The observations focused on identifying modifications influenced by socio-economic changes, modernization processes, and cultural shifts. Detailed notes and sketches were made during these visits to capture the nuances of architectural evolution.
2. **Photographic Surveys:** Photographic surveys were employed to visually document the architectural features and transformations of the studied buildings. High-resolution photographs were taken of both exterior and interior elements, capturing details such as decorative motifs, structural components, and spatial arrangements. These images served as a vital record of the current state of the buildings and provided a visual basis for comparative analysis. The photographic surveys complemented the observational data, offering a visual narrative of the architectural changes and continuity.
3. **Documentation:** Extensive documentation was undertaken to systematically record the architectural characteristics and historical significance of the buildings. This included the collection of architectural plans, drawings, and maps from local archives and heritage institutions. Measurements of buildings and detailed architectural descriptions were compiled to create an accurate and comprehensive record of each structure. The documentation process also involved transcribing and analyzing historical texts, legal documents, and property records to trace the ownership, usage, and modifications of the buildings over time. Field observations were conducted across several historical cores in Macedonia, specifically in cities such as Ohrid, Skopje, Bitola, and Strumica. A total of 50 houses were systematically observed to identify architectural transformations over the 19th century. These observations focused on changes in materials, construction techniques, and architectural forms.

Third Phase: The third and final phase involved the synthesis and analysis of the collected data, utilizing thematic analysis to identify recurring patterns and salient themes. Comparative analysis was also employed to examine variations and commonalities across different case studies, drawing out broader insights and theoretical implications. The findings were then contextualized within the broader socio-economic and cultural dynamics of the region, highlighting how changes in these domains influenced the development and transformation of vernacular architecture.

In conclusion, the research methodology adopted was meticulously designed to explore the complex interplay between socio-economic structures and vernacular architecture. By employing a qualitative approach and systematically progressing through preliminary, second, and third phases, the study was able to uncover deep insights into the cultural heritage and architectural practices of 19th-century Macedonia. The findings contribute to a richer understanding of how traditional building methods adapt to and reflect broader societal changes, offering valuable lessons for contemporary architectural practice and heritage conservation. In the preliminary stage of the methodology, key elements are delineated that hold particular significance in comprehending the evolution of distinct phases within the characterization of vernacular architecture during the 19th century. Temporal strata experiencing specific transformations are identified, encompassing aspects such as form, construction techniques, materials, and decorative motifs.

The methodology for this research commenced with the assembly of documentation and data collection, accompanied by a comprehensive multi-year analysis of the evolution and metamorphosis of 19th-century traditional architectural forms. Extensive literature spanning a considerable timeframe has been consulted to corroborate the various factors influencing the development of traditional architectural forms. The qualitative research methodology employed in this study utilized a multi-faceted approach to comprehensively explore the development and

transformation of vernacular architecture in 19th-century Macedonia. The combination of literature surveys, observations of transformations, photographic surveys, extensive documentation, and in-depth interviews provided a robust and nuanced understanding of the architectural practices and cultural heritage of the period. This methodology ensured that the study captured the complexities of the subject matter and contributed valuable insights to the field of architectural history and heritage conservation.



Fig. 1: Comprehensive Methodological Framework Employed
Source: Author

The research methodology used involves analyzing the basic factors that influenced changes in architectural form between 2000 and 2021. The research included a thorough examination of documented material from both rural (Tetovo region, Gostivar region, Berovo region) and urban (Kratovo, Veles, Strumica, Ohrid, Krusevo, Shtip, Tetovo, Struga, Bitola) areas of Macedonia. This material included authentic plans and drawings, data collected through interviews, extensive photographic documentation, and field research observations. The researchers conducted field measurements of architectural buildings, external elements, and interior elements to gain a comprehensive understanding of the structures.

The paper utilized extensive documentation and multi-year research to inform their approach to studying the architectural changes. The research findings were published professionally and scientifically for several regions, highlighting the local characteristics of buildings from the specified period. In the third phase of the research, criteria for factors influencing 19th-century development changes were determined through a multi-faceted approach. This approach allowed for the integration of practical and professional insights to establish a framework for applying a scientific approach to the topic.

Table 1: Preliminary, Secondary, and Tertiary Phases of Research

Source: Author

Phase of Research	Description
Preliminary	Key elements in 19th-century vernacular architecture evolution, focusing on changes in form, construction, materials, and decoration.
Second	Extensive documented materials from rural (Tetovo, Gostivar, Berovo) and urban (Kratovo, Veles, Strumica, Ohrid, Krusevo, Shtip, Tetovo, Struga, Bitola) Macedonia. Includes plans, drawings, interviews, photos, field observations, and measurements of buildings, facades, stairs, doors, windows, furniture, ceilings, and fences. Based on extensive author documentation and multi-year research.
Third	Establishing criteria for 19th-century developmental changes via a comprehensive study. Integrating professional experience and a holistic perspective to draw relevant conclusions. Establishing a framework for applying a scientific approach to the research.

Findings

An Introduction to Vernacular Architecture of Macedonia

The traditional architecture of 19th-century North Macedonia represents a distinct facet of Balkan architectural heritage, shaped by the prevailing Ottoman architectural influences of the era. Employing a construction system rooted in the utilization of stone, wood, and earthwork, these architectural expressions are characterized by their structural integrity and adaptability. Typically, the architectural framework comprises sturdy stone walls at ground level, complemented by upper floors constructed predominantly with skeletal wooden frameworks, known as "bondruk," facilitating the creation of diverse volumetric architectural configurations. Reflecting the socioeconomic realities of rural life, these dwellings exhibit modest dimensions, construction techniques, and architectural aesthetics, emphasizing practicality and simplicity. Central to their design ethos is the spatial organization, often comprising single or multiple rooms, delineating the functional and spatial boundaries within the dwelling. Regional variations in dwelling typologies emerge based on material preferences, dwelling layouts, and overall aesthetic considerations, such as the incorporation of open or closed verandas. Notably, certain regions boast grander architectural compositions, predominantly crafted from stone and spanning multiple levels, a design approach dictated by safety considerations and environmental constraints prevalent in mountainous terrains. This architectural narrative, as elucidated by Namichev (2009), underscores the nuanced interplay between historical context, regional influences, and pragmatic design imperatives inherent in 19th-century vernacular architecture.

Influenced by economic prospects, urban residences evolved to a heightened level of construction sophistication. Stemming from the urban planning principles emphasizing compact settlement layouts, the architectural configuration of residential structures adapted to the spatial constraints of their surroundings. Despite these adaptations, the tradition of employing stone walls at ground level endured, while the utilization of wooden skeleton frameworks for upper-level construction imparted a distinctive visual character to the dwellings (Namichev, 2022). The conducive economic and social milieu of urban environments fostered a conducive atmosphere for cultural development, increasing the likelihood of architectural innovations. The interplay of architectural elements such as gates, doors, bay windows, roof structures, and decorative motifs allowed for the incorporation of contemporary influences, lending a dynamic quality to the architectural landscape. In sum, the evolution of traditional architecture in the region epitomizes a distinctive autochthonous model reflective of the prevailing socio-economic dynamics of the 19th century.

Table 2: Determinants Shaping the Influence of Constituent Elements on the Architectural Characteristics of 19th-Century Traditional Architecture.

Source: Authors

No	Factors/criteriums	No	Elements of change
1	Socio-Economic Conditions	1	Spatial Configuration
2	Cultural Influences	2	Construction Techniques
3	Environmental Considerations	3	Material Selection
4	Technological Advancements	4	Functional Requirements
5	Urbanization Trends	5	Aesthetic Preferences
6	Demographic Shifts	6	Traditional vs. Modern Architectural Styles
7	Government Regulations	7	Ornamental Features
8	Historical Preservation	8	Urban Planning Strategies

Table 1 delineates the factors that significantly influenced the formation and evolution of traditional dwelling concepts in the 19th century. During the Ottoman rule, economic and social conditions had the most profound impact, particularly on the rights of the Orthodox population concerning sacred buildings and the positioning and design of their dwellings. The locational conditions and the selection of building materials—wood, stone, and tilled earth—were pivotal, both economically and ecologically, in the creation of indigenous dwellings. This

process culminated in the development of a distinctive local architectural style, wherein anthropometric measurements played a crucial role throughout the stages of construction, interior furnishing, spatial organization, structural integrity, and facade decoration. Consequently, these supporting factors collectively shaped the character and identity of the buildings.

In the subsequent development, these factors evolved through expressive elements in the 19th century, manifested in the expansion and enhancement of the usable living spaces in response to emerging needs. Improvements in construction techniques led to greater durability, prompting modifications in certain areas, such as the frequent partitioning of verandas on the first floor. Consequently, changes became evident in the interior spaces, which were enriched with built-in or movable furniture, and in the exterior decoration, where the volumetric enhancement of architectural forms contributed to the transformation of the urban landscape. Thus, the elements subjected to formal changes are defined and contextualized within this evolving architectural paradigm.

















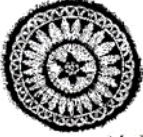
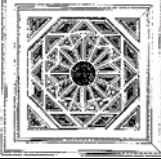



Table 3 provides an intricate visual exposition of spatial typologies, delineating the evolution across specific dimensions such as dwelling spaciousness, architectural form, decorative elements, interior arrangement, and urban morphology prevalent during the 19th century. Simultaneously, drawing upon meticulous analysis, extensive research endeavors, and supplementary data collection techniques encompassing detailed measurements and photographic documentation, this table elucidates the paramount elements that underpin the transformative trajectory witnessed throughout the 19th century architectural landscape.

1. The spatial configuration and functional scheme of the premises underwent continual modifications, adapting to the needs of newly formed families within the broader community. This evolution manifested in two primary ways: through the subdivision of existing dwelling spaces or the addition of another floor. Construction conditions in rural environments were more flexible, accommodating both approaches, whereas in urban settings, due to the compact nature of settlements, only the partitioning of existing spaces was feasible.
2. The construction system is intrinsically connected to the spatial concept, established at the inception of the building process. The defined construction methodology, particularly at the floor levels with a skeletal wooden framework, facilitated modifications in the size and shape of the interior spaces, though the extent of such expansions was tightly constrained (notably in Krushevo, Veles, and Kratovo).
3. The materials utilized in house construction—standardly stone, wood, and cultivated earth—remained consistent throughout the 19th century. Although the introduction of new modern materials influenced the protection of facades and certain interior elements, these changes did not significantly alter the overall architectural form (evident in Ohrid, Skopje, and Bitola).
4. The trajectory of development is most prominently evident in the embellishments and volumetric aspects of the fundamental architectural framework, particularly notable in urban residences. Decorative elements adorn facades, windows, doors, eaves, corner moldings, and bay windows, exerting significant influence on the overall aesthetic of dwellings (observed notably in Struga, Ohrid, and Krushevo).
5. Interior spaces experienced substantial influence from modern European design concepts, particularly evident in the selection of furniture, household items, and decorative elements (observed prominently in Ohrid, Bitola, and Skopje).

These elements, which contributed to alterations in the visual appearance of residential structures, enriched the character of neighborhood housing clusters, thereby transforming the cityscape. Through the evolution of individual houses and their creative aesthetic expressions, a city core panorama imbued with heightened urban values emerged (notably in Skopje, Prilep, Bitola, and Resen).

Table 3: Evolution of Spatial Types: Development of House Spaciousness, Form, Decoration, Interior, and Urban Landscape in the 19th Century"

Source: Author (Original drawings by P. Namicev, Co-author)

No	Elements of change	Beginning of 19 th c	Middle of 19 th c	End of 19 th c
1	Spaciousness of the house			
2	construction			
3	materials			
4	architectural form			
5	decoration exterior			
6	interior			
7	Urban concept			

By delineating the constituent elements contributing to the evolution of residential structures, we can gain a comprehensive understanding of the myriad factors that exert varying degrees of influence on the architectural transformations observed during this period of building culture development.

Discussion

The factors enumerated in Table 3 delineate the extent of their influence throughout the 19th century, elucidating both the contextual backdrop of their impact and their significance in shaping architectural forms. The spatial organization of residential structures is intricately linked to evolving perceptions of urban culture, wherein traditional local aesthetics intersect with broader influences.

Table 3. Factors Influencing the Evolution of 19th Century Traditional House Development
Source: Authors

Factors	Beginning of 19 th c	Middle of 19 th c	End of 19 th c
Social	Modest	Moderate	Improved
Economic	Modest	Stable	Improved
Local customs	Strong	Stable	Low influence
Materials	Modest	Stable	Expansion
Construction	Strong	Stable	Improved
Builders	Modest	Moderate	International experience
European architecture	Modest	Moderate	Intensive
Interior	Modest	Moderate	Intensive
Exterior decoration	Modest	Moderate	Intensive
Urban concept	Modest	Stable	Intensive

Within the social milieu, the dynamics of family life underwent minimal transformation during the 19th century, largely due to the enduring legacy of Ottoman rule and the legal constraints imposed on the Orthodox population across various facets of daily living. Opportunities for family engagement in economic activities remained limited, exerting marginal influence on the trajectory of traditional architectural development. Nevertheless, there persisted a steadfast commitment to upholding familial values and the time-honored tradition of multi-generational occupancy of residential dwellings (Correia, 2011).

- The impact of European architectural advancements is notably more conspicuous within urban residences compared to rural settings, particularly evident in the interior furnishing, both inside and outside decor, and courtyard embellishments derived from urban contexts. The integration of specific architectural elements onto facades, within the framework of local architectural paradigms, served to underscore superiority and affirm dominance, while simultaneously augmenting traditional forms with modern accents. Towards the close of the 19th century, there was a heightened adoption of these elements, particularly among affluent urban families.
- The family, as the primary inhabitant of the household, is deeply rooted in local mentalities, possessing strong indigenous perceptions regarding form, size, material utilization, spatial layout, aesthetics, and interior design. These notions are intrinsically linked to the broader cultural ethos surrounding domestic life and are inherited through familial ties, contributing significantly to the culture of living.
- The evolution of influences on the construction process and the resultant architectural configuration undergoes a series of developmental shifts attributable to the shifting trends within the realm of builder types. This transformation is epitomized by the progression in spatial organization, interior and exterior decoration, which subsequently emerge as distinctive local expressive elements. Notably, certain non-traditional details are selectively incorporated to underscore the modern ethos and contemporary architectural sensibilities. Over time, these influences culminate in the stylized incorporation of certain elements, which, as models of modernity, become recurrent motifs in 19th-century buildings across locales such as Bitola, Resen, Prilep, Ohrid, and Skopje.
- A comprehensive overhaul of construction methodologies and structural systems yields tangible improvements in both the functionality and aesthetic appeal of interior design. Notably, there is a pronounced advancement in spatial arrangement within

household interiors. Decorative elements crafted from wood, ceramics, and metal, inspired by European precedents, are seamlessly integrated into traditional contexts, enriching the spatial experience. The prevalence of imported furniture attests to an intense embrace of external influences, with its enduring value being revered across multiple generations (Kirovska, 1996).

- The holistic portrayal of the external aesthetic, encompassing appearance, shape, volume, and adornment, not only shapes the development of certain stylistic attributes but also fosters the emergence of an authentic architectural identity. Despite evolving stylistic sensibilities, traditional architectural elements such as bay windows, rhythmically arranged windows, eaves decoration, and friezes, along with tympanons, have endured (Nikoloska, 2003). These elements collectively contribute to a nuanced diversity in the application of exterior features, effectively encapsulating the rich tapestry of building culture values.
- All enumerated factors that exert varying degrees of influence on the evolution of building culture are synthesized within the urban context of residential structures. The strategic placement of houses within a dense network of streets, organized into cohesive neighborhoods with distinct urban features such as fountains, squares, and bazaars, cultivates a distinctive urban identity for each locality. Consequently, each urban entity boasts a unique autochthonous aesthetic, intricately woven with the values of construction culture (Cipan, 1978; Stojanovski, 2015).

Discussion of Findings and Comparison with Similar Research

The findings of this study on the vernacular architecture of 19th-century Macedonia reveal significant insights into the socio-cultural, economic, and historical factors influencing architectural practices during this period. These findings are compared with similar research conducted in other regions, highlighting both similarities and differences. Understanding these comparisons helps contextualize the unique aspects of Macedonian vernacular architecture within broader architectural trends and practices.

The key findings of this study include:

1. **Influence of Socio-Economic Conditions:** The socio-economic conditions played a crucial role in shaping the architectural forms and materials used in vernacular buildings. Wealthier urban areas exhibited more pronounced European influences in architectural details and interior decorations, whereas rural areas retained more traditional elements.
2. **Modernization and Material Use:** The gradual adoption of modern materials and construction techniques influenced the evolution of building practices. However, traditional materials such as wood and stone continued to dominate, adapted to incorporate new styles and technologies.
3. **Cultural and Local Influences:** The architectural form and decoration reflected a blend of local traditions and external influences. Decorative elements and spatial organization often showcased a hybrid of traditional Macedonian and contemporary European styles.
4. **Urban Planning and Neighborhoods:** The layout and organization of urban neighborhoods, including the placement of houses within a dense network of streets, created distinct urban forms. These forms were influenced by both traditional practices and the need to accommodate modern urban functions.

Comparison with Similar Research

European Vernacular Architecture

Similarities: Studies on vernacular architecture in other parts of Europe, such as Italy and Greece also highlight the blend of traditional and modern influences. For instance, the integration of classical and Renaissance elements into vernacular buildings is a common theme in these regions (Correia, 2011).

Differences: Unlike Macedonia, where the influence of European styles was more pronounced in urban areas, rural regions in Western Europe often experienced a more uniform spread of architectural changes due to better economic conditions and infrastructure development.

Middle Eastern Vernacular Architecture

Similarities: Research on Middle Eastern vernacular architecture reveals a strong reliance on local materials and traditional construction techniques, similar to Macedonian practices. The use of stone and wood, adapted to local climatic conditions, is a common feature (Oliver, 2003).

Differences: The Middle Eastern context often exhibits a more pronounced influence of Islamic architectural elements, such as intricate geometric patterns and courtyard-centered designs, which are less prevalent in Macedonian architecture.

Balkan Vernacular Architecture

Similarities: In the broader Balkan region, including Serbia and Bulgaria, studies show a similar trend of blending traditional and modern elements. The socio-political changes of the 19th century, including the influence of the Ottoman Empire, shaped the architectural landscape across these regions (Kojic, 1976).

Differences: While there are many similarities in material use and decorative styles, Macedonian architecture uniquely integrates specific regional motifs and spatial arrangements that reflect its distinct cultural heritage. The emphasis on bay windows and rhythmically arranged windows, for example, is particularly characteristic of Macedonian vernacular architecture (Namicev, 2023).

Explanation of Differences

The differences observed between the findings of this study and similar research can be attributed to several factors:

1. **Historical Context:** The unique historical trajectory of Macedonia, including its socio-political dynamics and interactions with neighboring cultures, has significantly influenced its architectural practices. The specific impact of the Ottoman Empire and subsequent European influences shaped a distinct architectural identity.
2. **Economic Conditions:** The economic conditions in Macedonia during the 19th century, marked by varying degrees of wealth between urban and rural areas, led to differential adoption of modern materials and techniques. In contrast, regions with more uniform economic development saw a more consistent spread of architectural innovations.
3. **Cultural Influences:** The strong preservation of local traditions and cultural practices in Macedonia played a crucial role in shaping architectural forms. While European influences were evident, they were often adapted to fit local customs and aesthetic preferences, resulting in a unique hybrid style.
4. **Geographical and Climatic Factors:** The geographical and climatic conditions of Macedonia necessitated specific architectural solutions, such as the use of thick stone walls for insulation and wooden elements for flexibility and resilience. These factors contributed to the distinct characteristics of Macedonian vernacular architecture compared to other regions.

In conclusion, the findings of this study provide valuable insights into the vernacular architecture of 19th-century Macedonia, revealing a complex interplay of traditional practices and modern influences. When compared with similar research from other regions, both similarities and differences emerge, highlighting the unique socio-cultural, economic, and historical context of Macedonia. Understanding these nuances enhances our appreciation of the region's architectural heritage and its place within the broader landscape of vernacular architecture.

The comprehensive analysis conducted in this study elucidates discernible trends within the evolution of construction culture, wherein various factors exert distinct degrees of influence on architectural transformations. Notably, advancements in construction techniques, implemented with consistent materials, engender a newfound creativity in architectural expression. Concurrently, the progression of building materials, coupled with innovative construction methodologies, alongside the infusion of novel European technical achievements prevalent in the 19th century, continue to shape the definition of aesthetic elements within exterior design. This synthesis of traditional craftsmanship with contemporary ingenuity underscores the dynamic interplay between heritage preservation and architectural innovation, thereby charting a course towards a progressive and culturally resonant built environment.

Conclusion

Based on the comprehensive analyses conducted and the practical insights gained, this study culminates in several significant conclusions regarding the pivotal factors shaping the evolution of traditional architectural forms within 19th-century building culture.

Socio-economic conditions, alongside the modernization of materials, and entrenched local building practices exhibit remarkable stability over an extended timeframe, exerting minimal direct impact on architectural morphology. The gradual integration of modern materials and construction systems, while present, yields only marginal changes in architectural configurations.

Conversely, the influx of modern European architectural trends, facilitated by the mobility and expertise of construction teams, wields a more pronounced influence on specific facets of architectural evolution. This influence is particularly conspicuous in the refinement of interior and exterior decorations, as well as in the urban rejuvenation efforts targeting historically significant city centers characterized by a dense concentration of heritage buildings (Cipan, 1978). This nuanced interplay between traditional steadfastness and external influences underscores the intricate dynamics inherent in the preservation and evolution of architectural heritage in the 19th century and beyond, highlighting the harmonious blend of traditional elements with modern innovations, shaping the architectural landscape of the era.

The intricate array of influences prevalent during the 19th century, while not fundamentally altering the core concepts of building materials, construction methods, or architectural forms, nonetheless introduced subtle yet significant changes impacting the living culture inherent in the vernacular architecture of the period (Namichev, 2023).

In terms of building materials and their application within construction systems, a standardized set of elements emerged, rooted in longstanding traditions. Specific materials were consistently utilized for designated structural and decorative roles: wood was employed for windows, doors, structural supports, and patio embellishments, while stone was predominantly used for constructing walls, decorative corners, and other façade adornments. This material usage adhered to a tradition that dictated their placement and application, ensuring a cohesive aesthetic and functional design.

Beyond materials, the evolution of architectural elements such as windows, doors, and overall house volumes led to noticeable changes. The dimensions and stylistic treatments of these elements underwent significant transformation, influencing the spatial dynamics and visual identity of neighborhoods. These architectural modifications contributed to the development of distinct stylistic-urban units, reflecting an evolving aesthetic that intertwined traditional forms with emerging trends.

The cumulative effect of these changes, although not revolutionary, subtly reshaped the architectural landscape and enriched the cultural fabric of the 19th-century vernacular architecture, marking a period of gradual yet impactful evolution.

The transformations within the socio-economic fabric significantly influenced the building culture of vernacular architecture. Despite its origins in an authentic, national form shaped by the character of the local populace, vernacular architecture inevitably absorbed contemporary modern movements, instigating notable changes in 19th-century structures. These influences are particularly evident in the modernization of houses within the historical

cores of 19th-century cities, reflecting a blend of tradition and innovation (Namicev, 2014; Namicev & Nestoroska, 2023).

The vernacular architecture of 19th-century Macedonia stands as a testament to the ingenuity, resourcefulness, and craftsmanship of its people. This architectural heritage encapsulates a rich cultural legacy that continues to inform and inspire contemporary architectural practices. It serves not only as a historical record but also as a profound reminder of the region's distinctive history and identity. The enduring impact of these traditional forms, despite the pressures of modernization, underscores the dynamic interplay between preservation and adaptation in the architectural evolution of the period.

Specific Conclusions

This study aimed to investigate the factors influencing the transformation of vernacular architecture in 19th-century Macedonia, focusing on materials, construction techniques, architectural forms, socio-economic structure, and cultural influences. Based on the research findings, the following specific conclusions are drawn:

1. **Materials:** Traditional materials such as wood and stone remained predominant, but their application evolved with the introduction of new techniques and influences from European styles.
2. **Construction:** Advances in construction techniques allowed for more durable and complex structures, incorporating both traditional and modern methods.
3. **Architectural Forms:** Architectural forms exhibited a blend of traditional Macedonian elements with European influences, resulting in hybrid styles that retained local identity while integrating new aesthetics.
4. **Socio-Economic Structure:** The socio-economic conditions played a significant role in the architectural evolution, with wealthier urban areas adopting more European influences compared to rural areas that maintained traditional forms.
5. **Culture:** Cultural heritage strongly influenced architectural practices, preserving traditional motifs and spatial arrangements while adapting to contemporary trends.

Factors Resulting in Transformations

1. **Materials- Evolution:** The primary materials used in Macedonian architecture—wood and stone—remained consistent, but their application evolved. European influence led to the adoption of new decorative techniques and construction methods, enhancing the aesthetic and functional qualities of buildings. Impact: Traditional materials were adapted to incorporate new stylistic elements, resulting in buildings that retained their historical character while embracing modern innovations.
2. **Construction: Advancements-** Construction techniques advanced with the introduction of European methods. This included improved masonry techniques, the use of lime mortar, and the introduction of new tools and technologies. Impact: These advancements enabled the construction of more complex and durable structures, blending traditional Macedonian craftsmanship with modern engineering practices.
3. **Architectural Forms-Hybrid Styles:** The architectural forms of 19th-century Macedonia reflected a blend of traditional and European elements. Bay windows, rhythmic window arrangements, and ornate eaves were combined with new decorative styles and spatial organization. Impact: This fusion resulted in a unique architectural identity that preserved local traditions while integrating broader European trends.
4. **Socio-Economic Structure-Urban vs. Rural:** The socio-economic conditions varied significantly between urban and rural areas. Wealthier urban areas were more exposed to European influences, leading to greater architectural innovation and stylistic changes. Impact: Urban architecture exhibited more pronounced European features, while rural architecture remained more traditional, highlighting the economic disparities and their influence on architectural evolution.

5. **Culture-Cultural Heritage:** The strong cultural heritage of Macedonia played a crucial role in shaping architectural practices. Traditional motifs, spatial arrangements, and construction techniques were preserved and adapted to contemporary needs. **Impact:** Cultural continuity ensured that even with external influences, the core identity of Macedonian architecture remained intact, reflecting the region's rich historical and cultural legacy.

Revisiting Aims and Objectives

Aims

- To analyze the factors influencing the transformation of vernacular architecture in 19th-century Macedonia.
- To understand how socio-economic, cultural, and technological changes impacted architectural practices.
- Objectives
 - To investigate the materials used in 19th-century Macedonian architecture.
 - To study the construction techniques employed during this period.
 - To examine the architectural forms and their evolution.
 - To explore the socio-economic conditions and cultural influences on architecture.

Achievements

- **Materials:** The study detailed how traditional materials were adapted with new techniques and European influences, achieving the objective of investigating material usage.
- **Construction:** The research provided insights into the advancements in construction techniques, fulfilling the objective of studying construction methods.
- **Architectural Forms:** The examination of hybrid architectural styles met the objective of understanding the evolution of architectural forms.
- **Socio-Economic and Cultural Influences:** The analysis of urban vs. rural differences and the impact of cultural heritage addressed the objectives related to socio-economic conditions and cultural influences.

Strengths and Weaknesses of the Research

- Strengths
 - **Comprehensive Analysis:** The study provided a detailed analysis of various factors influencing vernacular architecture, offering a holistic understanding of the subject.
 - **Rich Data Sources:** Extensive use of literature, observations, photographic surveys, and interviews ensured a robust and well-rounded dataset.
 - **Cultural Context:** The research highlighted the importance of cultural heritage, offering valuable insights into how traditional practices were preserved and adapted.
- Weaknesses
 - **Limited Geographical Scope:** The focus on Macedonia, while providing deep insights into the region, may limit the generalizability of findings to other contexts.
 - **Temporal Constraints:** The study focused on the 19th century, potentially overlooking earlier or later developments that could provide a more comprehensive historical context.
 - **Subjectivity in Interpretation:** The qualitative nature of the research, while rich in detail, may introduce subjectivity in the interpretation of findings.

This study successfully achieved its aims and objectives, providing a nuanced understanding of the factors influencing the transformation of 19th-century Macedonian vernacular architecture. By examining materials, construction techniques, architectural forms, socio-economic conditions, and cultural influences, the research highlighted the complex interplay of tradition and modernity. While the study's strengths lie in its comprehensive and culturally contextual analysis, its limitations suggest areas for future research, such as broader geographical comparisons and extended temporal studies.

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