

# Ottoman Influence on Architecture: The Evolution of Spatial and Decorative Elements in the 19<sup>th</sup> Century Traditional Macedonian Architecture

Petar Namicev<sup>1</sup> & Ekaterina Namicheva Todorovska<sup>2</sup>

<sup>1</sup>Art Academy, Goce Delcev University, Stip, North Macedonia

<sup>2</sup>Faculty of Natural and technical science Goce Delcev University,  
Stip, North Macedonia

<sup>1</sup>petar.namicev@ugd.edu.mk

<sup>2</sup>ekaterina.namiceva@ugd.edu.mk

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## Abstract

Vernacular architecture of 19th-century Macedonia have undergone significant transformations, primarily influenced by Ottoman architectural systems. In this context, "vernacular houses" refer to traditional dwellings built by local communities using indigenous materials and construction techniques. This study examines how Ottoman spatial configurations and decorative elements have been incorporated into Macedonian architecture during this period, illustrating the complex interplay between external influences and local adaptations. By examining these changes, the research reveals the evolving architectural identity of Macedonia in the 19th century.

The research employs various qualitative methods, including a comprehensive review of historical texts and scholarly literature related to Macedonian vernacular architecture. In addition, field surveys, photographic documentation and interviews with local experts and residents have been conducted to observe and record architectural changes.

The study concludes that 19th-century Macedonian vernacular houses have experienced significant alterations due to the incorporation of Ottoman architectural principles. These changes have been evident in the spatial organization, decorative motifs, and construction methods, which have been drawn from Ottoman traditions while preserving the distinctive characteristics of the region's vernacular architecture. This adaptive process underscores the dynamic nature of Macedonian architecture, which has evolved through a blend of local and external architectural elements.

**Keywords:** Vernacular architecture, Ottoman architecture, 19th century, Macedonia, architectural transformations, spatial organization, decorative elements

## Introduction

Between the 15th and early 20th centuries, Ottoman rule in the Balkans has significantly reshaped architectural paradigms across sacred, public, and secular buildings in both urban and rural areas. In urban centers, new architectural models and urban planning approaches have emerged, accompanied by innovative techniques for decorative treatments. Ottoman settlers have introduced elements that have transformed the indigenous spatial organization of Christian households, while traditional construction methods have been adapted to meet the new spatial and aesthetic demands of the period (Namichev, 2022).

The influence of the Ottoman presence has extended beyond architecture, affecting the social fabric, family structures, and everyday life. Legal restrictions and economic constraints imposed on the local Orthodox population have further influenced the region's architectural and social evolution. Christian households, in particular, have experienced substantial transformations as Ottoman residential patterns and decorative features have been integrated into traditional houses, resulting in a hybrid architectural style that has mirrored the socio-cultural dynamics of the era (Cipan, 1955).

This period of Ottoman rule represents a pivotal moment in Macedonia's architectural history, marking the evolution of traditional forms under external influence. The changes have been driven by a combination of legal, socio-economic, and cultural exchanges, culminating in the development of a hybrid style that have blended indigenous techniques with Ottoman elements (Angelova, 1977).

In this context, this paper examines the impact of Ottoman rule on traditional Macedonian architecture. The aim of this research is to investigate the impact of Ottoman rule on traditional Macedonian architecture, with a focus on the spatial and decorative changes in vernacular houses.

The specific objectives of this research are to:

- Analyze the traditional architectural forms of Macedonian village and town houses prior to Ottoman influence.
- Identify the specific spatial and decorative elements introduced during the Ottoman period.
- Examine the socio-political and economic factors that drove these architectural transformations.
- Explore regional variations in the hybrid architectural style that emerged.
- Assess the long-term impact of these changes on Macedonia's architectural heritage

## Theoretical Framework

The theoretical framework for understanding vernacular architecture offers a critical lens for analyzing traditional Macedonian architecture, particularly its evolution under Ottoman influence. Scholars define vernacular architecture as encompassing not only the physical characteristics of buildings but also the socio-cultural contexts in which they are created.

Oliver (2003) describes vernacular architecture as the architecture of ordinary people, shaped by local needs, materials, and traditions rather than by professional architects. His perspective highlights the adaptive and functional nature of these buildings, which respond to specific cultural and environmental conditions. According to Oliver, vernacular architecture embodies a community's collective knowledge, evolving to meet its social, economic, and environmental needs over time. Davis (2006) expands this understanding by emphasizing the cultural significance of vernacular architecture. He argues that beyond serving practical purposes, these buildings also carry symbolic meanings and express cultural values. They become repositories of identity, reflecting the beliefs, rituals, and lifestyles of their inhabitants.

Correia (2011) introduces an environmental dimension, focusing on the sustainability of vernacular architecture. He stresses that traditional building techniques are often inherently eco-friendly, utilizing local resources and knowledge passed down through generations to integrate seamlessly with the natural environment.

Namicev (2022) adds the concept of "place-making," emphasizing role of architecture in fostering a sense of place and belonging. He argues that vernacular architecture strengthens social cohesion and identity by anchoring communities to their cultural roots and the physical landscape. Similarly, Rapoport (1969) presents vernacular architecture as a dynamic process, evolving in response to changing social, economic, and environmental factors. He emphasizes that while external influences may be incorporated, core traditional elements that define the character of architecture are retained.

In summary, the theoretical framework of vernacular architecture provides a comprehensive lens for examining the transformations in traditional Macedonian architecture influenced by Ottoman systems. Drawing from these theoretical perspectives, this study explores how Ottoman spatial and decorative elements have been integrated into local building practices, highlighting the interplay between external influences and local adaptations. This approach deepens our understanding of Macedonia's architectural heritage and its socio-cultural dimensions, illustrating the balance between tradition and innovation (Angelova, 1987).

## Literature Review

A critical review of previous research on the transformation of Macedonian vernacular architecture under Ottoman rule reveals a well-established but evolving body of knowledge. The central focus of much research has been the interaction between local architectural traditions and Ottoman influences, with particular attention to the socio-political and economic contexts shaping these dynamics.

Rapoport (1969) underscores the need to view vernacular architecture as a living system, profoundly influenced by social conditions and evolving over time. He argues that architectural changes are not merely aesthetic but reflect broader socio-cultural transformations. This perspective resonates with research on Macedonian vernacular architecture, where Ottoman influence introduced new spatial and decorative elements while addressing local needs and resources.

In fact, Oliver (1989) emphasizes that traditional buildings are shaped by local materials, climate, and cultural practices. His work is fundamental in the analysis of Macedonian architecture, where indigenous construction methods were blended with Ottoman elements. This fusion highlights the adaptive nature of vernacular architecture, integrating external influences while maintaining local identity. Adding to this, Namicev (2022) builds on this by exploring how Ottoman rule in the Balkans introduced new architectural paradigms in both urban and rural contexts. He notes that socio-administrative changes during this period led to the spatial reorganization of urban areas and the incorporation of Ottoman motifs in traditional houses. Namicev's findings underscore the complexity of this architectural evolution, showing that Macedonian homes adapted to meet new legal and social demands while retaining pre-Ottoman features.

Simultaneously, Cipan (1955) provides insights into specific spatial changes in Macedonian homes during Ottoman rule, such as the introduction of the *\*divanhane\** (a common space in Ottoman homes), which has altered traditional household layouts. Cipan's research is crucial for understanding how architectural transformations reflected broader societal changes during the period. Adding to this, Kiel (1990) explores urban transformations in the Ottoman Balkans, emphasizing that Ottoman architectural elements were selectively adopted by local populations. His research shows that while Ottoman models introduced new forms, they were adapted to local traditions, especially in residential buildings, where indigenous materials and techniques were blended with Ottoman influences to create a unique architectural style.

Moreover, Veinstein (2004) highlights the role of the socio-political structure under Ottoman rule in shaping architectural forms. Legal and economic restrictions imposed on Christian populations influenced how homes were constructed and decorated. His work provides key insights into the socio-economic constraints that shaped the architectural transformations of the period.

In contrast, Petrevski (2016) focuses on the decorative aspects of Macedonian vernacular architecture, noting the introduction of Ottoman floral and geometric motifs in home interiors. While these elements were influenced by Ottoman styles, Petrevski argues that they were adapted to suit local tastes and cultural practices, illustrating a negotiated process of architectural transformation rather than a simple imposition.

Despite the wealth of research, certain gaps remain. Most studies such as those by Kiel (1990) and Namicev (2022), focus primarily on urban areas, leaving rural adaptations of Ottoman architectural models underexplored. While much attention has been paid to the influence of Ottoman rule on spatial and decorative elements, the role of economic class in shaping these transformations has been less examined, with research tending to focus on general trends rather than specific socio-economic groups.

In conclusion, while existing research on the Ottoman influence on Macedonian vernacular architecture is extensive, several areas remain ripe for further exploration. These include the impact of architectural transformations in rural settings, the influence of economic class, and regional variations in the adoption of Ottoman elements. In this context, this study aims to address these gaps, providing a more comprehensive understanding of the hybrid architectural forms that emerged in Macedonia during the Ottoman period.

**Table 1:** Influences of Ottoman architectural elements across various regions in the Balkans

Source: Author

Region	Albania	Bulgaria	Serbia	Kosovo and Metohija	Greece	Macedonia
<b>Spatial</b>	Maintained local	New elements	Low influence	Maintained local	Maintained local	New elements
<b>Decorative</b>	Low influence	Reached development	Medium influence	Medium influence	Strong influence	Reached development
<b>Structural</b>	Local tradition	Low influence	Low influence	Low influence	Low influence	Low influence
<b>Interior</b>	Local tradition	Strong influence	Strong influence	Strong influence	Strong influence	Strong influence
<b>Materials</b>	Limited development	Maintained local	Maintained local	Maintained local	Maintained local	Maintained local
<b>Urban</b>	Significant influence	Significant influence	Significant influence	Significant influence	Significant influence	Significant influence
<b>Economic</b>	Medium	Strong	Medium	Medium	Medium	Strong

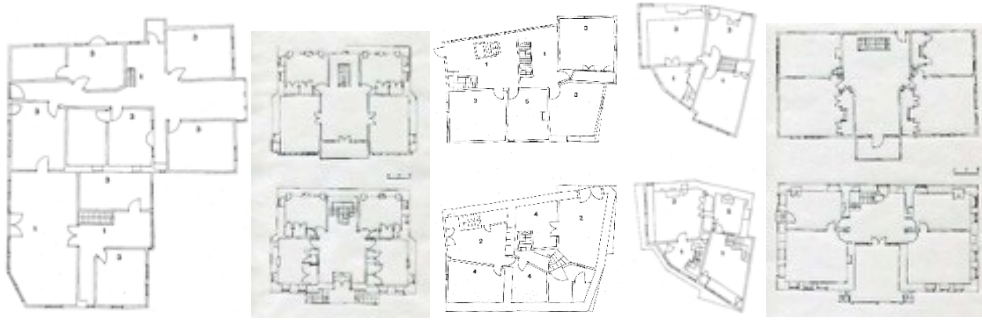
The examination of Ottoman influence on the architectural and aesthetic features of residential houses across the Balkan countries reveals the diversity and variation of this impact. By analyzing the presence, intensity, and form of influence in different regions during house construction, the extent of the Ottoman concept's integration becomes clear. This influence was shaped by various factors, including economic conditions, the construction setting (urban vs. rural), family needs, and the building trends of the 19th century. It is crucial to explore and analyze spatial configurations, structural elements, decorative details, material use, and interior design transformations. Together, these elements form a comprehensive picture of the settlements where these diverse influences converge (Cipan, 1978).

### Background Material: Vernacular Architecture

Drawing on years of analysis of 19th-century residential architecture in Macedonia and published studies detailing the Ottoman building influence, the developmental changes in architectural elements can be defined. These include spatial modifications, specific decorative elements on house exteriors, interior modernization, the use of contemporary materials of the time, and structural changes in building methods. These shifts improved functionality and economic efficiency, culminating in the final urban image of city centers. Research into these

architectural elements helps trace the development of Ottoman influence in Macedonian houses during this period. Key areas of development include:

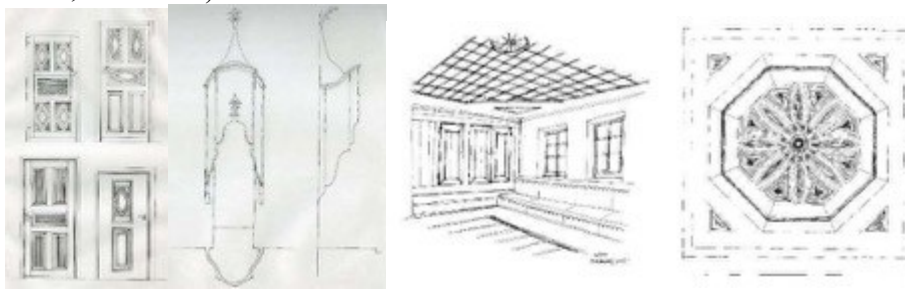
- **Spatial Concept:** The spatial organization of 19th-century Macedonian houses was significantly influenced by Ottoman designs, leading to an expansion of interior spaces and a modification of spatial layouts. These changes were driven by the growing needs of wealthier families, resulting in new standards for living, working, and social gatherings. This evolution required a reorganization of space to accommodate daily life, festivities, and family activities (examples include Ohrid, Veles, Tetovo, and Gostivar) (Nikoloska, Tomovski).



**Fig. 1:** A developed type of spatial organization of the house in Berovo, Krushevo, Veles, Ohrid, and Strumica.

Source: Architectural drawings by Petar Namichev prepared for this study.

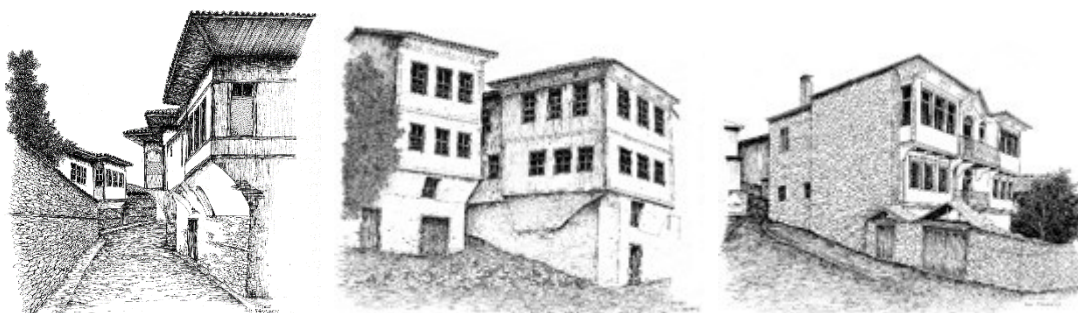
- **Decorative Elements:** Ottoman influence is particularly evident in the rich external decorative features of 19th-century Macedonian houses. Colorful stucco decorations, graphic depictions, and other aesthetic embellishments are found on eaves, doorframes, window frames, and pediments (in cities such as Krushevo, Veles, Tetovo, and Skopje) (Kirovska, Nikoloska).



**Fig. 2:** Interior decoration, Struga, Ohrid, Shtip.

Source: Hand-drawn sketches by Petar Namichev for this study, using the ink and pencil on paper method.

- **Interior Decoration:** The interior decoration of Macedonian houses was heavily influenced by both Ottoman and European cultures. These influences were reflected in spatial layouts, furniture, and household items, integrated into the local traditional style. The interiors featured stucco and painted wall decorations, wood carvings, and geometric designs, reflecting a blend of cultural influences (examples from Ohrid, Tetovo, Debar, and Struga). The interior of homes in Struga, Ohrid, and Shtip illustrates the rich cultural and artistic heritage of the region. Struga homes are known for their intricate wooden ceilings and ornamental woodwork, while Ohrid interiors are notable for frescoes and elaborately painted ceilings that contribute to a sense of historical grandeur.



**Fig. 3:** The enclosed nature and external details, along with the painted decoration on the facade, in Veles and Krushevo.

Source: Hand-drawn sketches by Petar Namichev for this study, using the ink on paper method.

- Urban Conception:** The urban structure of 19th-century Macedonian cities, developed over several centuries (11th–19th centuries), was shaped by both local needs and Ottoman urban laws. Cities were often built on steep terrain, with an amphitheatrical layout providing panoramic views. Dense clusters of residential and public buildings were connected by narrow streets and squares. Ottoman influence is visible in the incorporation of public facilities like baths, inns, and bazaars, which contributed to a distinct urban spirit under Ottoman rule (seen in Veles, Ohrid, Krushevo, and Kratovo) (Namichev - on inns).

In cities like Kratovo, Kriva Palanka, and Ohrid, residential architecture shows a unique adaptation to urban planning, reflecting both historical influences and the demands of urban living. Kratovo homes adapt to hilly terrain with multi-level designs and terraces, while Kriva Palanka houses follow a more linear layout along rivers and roads, emphasizing a connection to the natural landscape. In Ohrid, homes are oriented toward Lake Ohrid, with large windows and balconies to maximize views, blending private and public spaces harmoniously. Overall, these cities demonstrate sophisticated architectural responses to both practical needs and aesthetic considerations.



**Fig. 4:** Houses Adapted to the Urban Concept of the City: Kratovo, Kriva Palanka, Ohrid.  
Source: Hand-drawn sketches by Petar Namichev for this study, using the ink on paper method.

- Materials:** Traditional building materials were predominantly used until the 19th century, with gradual improvements in construction techniques. Wood (for doors, windows, ceilings), metal (hinges, shutters), and soil-based materials (for walls, floors, and facades) were commonly used. In the early 20th century, modern materials such as concrete and iron were introduced, significantly altering building techniques and reducing the Ottoman influence on residential construction. However, older Ottoman-influenced buildings required preservation to maintain their authenticity within the urban historical core (examples from Resen, Bitola, and Prilep).

The use of traditional materials was closely tied to structural innovations, such as the decline of Ottoman-style wooden skeletons and clay mixtures, replaced by modern building systems. Despite these changes, Ottoman influences persisted in older buildings, which continued to be preserved for their historical and cultural significance.

In conclusion, the architectural evolution of Macedonian houses in the 19th century illustrates the complex interplay between local traditions and Ottoman influences. These transformations, evident in spatial design, decorative elements, urban planning, and material use, contributed to a unique hybrid architectural style that remains a testament to the region's rich cultural history.



**Fig. 5:** Enhanced Tradition in the Use of Building Materials: Tetovo, Veles, Berovo.  
Source: Hand-drawn sketches by Petar Namichev for this study, using the ink on paper method.

The architecture of cities like Tetovo, Veles, and Berovo illustrates a refined tradition in the application of building materials, blending historical practices with modern advancements to enhance both the structural and aesthetic qualities of their architecture. These cities have successfully preserved their cultural heritage while adapting to contemporary technologies and needs. This integration ensures that the architectural legacy is passed on to future generations, with buildings remaining both functional and visually appealing.

#### 4.1 Building Materials and Architectural Identity

- **Tetovo:** Traditional materials such as timber, stone, and clay dominate Tetovo's architecture, reflecting both Ottoman and local influences. The intricate wood carvings and painted façades serve as a testament to its cultural heritage. The evolution of material usage reflects the region's adaptation to modern advancements without losing its historical charm.
- **Veles:** In Veles, traditional materials—wood, stone, and adobe—are enhanced by modern building techniques. These natural resources have shaped the architectural identity of the region, where construction techniques have been passed down through generations. The city exemplifies the harmonious blend of old and new, where buildings reflect both historical continuity and modern needs.
- **Berovo:** Known for its use of locally sourced wood and stone, Berovo continues the tradition of constructing houses with timber frames and stone walls. This approach complements the natural surroundings and enhances the buildings' resilience. The evolution of carpentry and masonry skills over time has led to improved durability and aesthetics, maintaining Berovo's architectural distinctiveness.



**Fig. 6:** Constructive Solution Enabling Attractive Architecture: Veles, Kratovo, Berovo.  
Source: Hand-drawn sketches by Petar Namichev for this study, using the ink on paper method.

#### 4.2 Functionality of Space and Its Transformation Over Time

The cities of **Veles**, **Kratovo**, and **Berovo** exhibit flexible and adaptable space utilization in their architectural designs. This transformation reflects the evolving needs of inhabitants over time, with a flexible skeletal system providing structural integrity while allowing for modifications.

- **Veles:** The city's architectural framework incorporates traditional and modern elements, allowing spaces to adapt to changing functional and aesthetic preferences. The skeletal system's flexibility has enabled continuous modifications to accommodate contemporary living without compromising historical significance.
- **Kratovo:** The unique geographical and historical context of Kratovo demands architectural solutions that prioritize both beauty and practicality. The adaptable skeletal systems of its buildings preserve their heritage while accommodating modern transformations, allowing the architecture to evolve alongside the needs of its residents.
- **Berovo:** The town's focus on functional yet attractive architecture is evident in its flexible skeletal systems, enabling ongoing spatial transformations. The continued adaptability of these spaces helps maintain the architectural identity while ensuring they remain relevant to modern demands.



**Fig. 7:** Potential for Transforming the Structural Skeletal System: Tetovo, Veles.  
Source: Hand-drawn sketches by Petar Namichev for this study, using the ink on paper method.

#### 4.3 Economic Efficiency and Local Materials

The use of locally sourced materials has always been an economically efficient approach to construction in cities like **Tetovo** and **Gostivar**. These materials, often processed with techniques seen in Ottoman public and residential buildings, ensure both durability and cost-effectiveness. This method not only supports local economies but also preserves the cultural significance of the materials used, enhancing the architectural identity of the region.

#### 4.4 Flexible Structural Systems

The flexible structural systems employed in these buildings allow for ongoing modifications to spatial configurations without compromising their integrity. This adaptability is crucial for long-term usability and is seen in cities such as **Tetovo** and **Veles**, where structural flexibility is combined with economic efficiency. The strategic use of these systems ensures



that buildings remain both relevant and durable over time, meeting the evolving needs of their inhabitants.

#### 4.5 Influence of Ottoman Architectural Practices

The influence of Ottoman architecture is pervasive in the material selection, structural systems, and design practices seen in **Tetovo** and **Veles**. Ottoman building techniques have been seamlessly integrated into the local architectural traditions, resulting in structures that are robust, adaptable, and culturally significant. This historical influence extends across the entire construction process, from initial design to the functional use of finished buildings.



**Fig. 8:** Economic Location, Building Materials, Interior Space, and Construction Methods: Ohrid.  
Source: Hand-drawn sketches by Petar Namichev for this study, using the ink on paper method.

#### 4.6 19th Century Vernacular Architecture in Macedonia and Ottoman Influence

Research shows that Ottoman influence on Macedonian houses between the 15th and 19th centuries significantly shaped their design, construction, and aesthetics. By the 19th century, these influences reached a mature and refined form, profoundly impacting:

- **Spatial and Structural Elements:** Primary spaces like rooms and kitchens, along with secondary spaces such as cellars and pantries, retained local functions. Ottoman influence was more prominent in areas where economic and strategic development allowed for the adoption of Ottoman-inspired forms.
- **Exterior Aesthetics:** Modest aesthetic details, particularly in economically developed areas, reflect Ottoman design elements. However, these were often tempered by local traditions and cultural preferences, particularly in cities like **Ohrid**, where Ottoman and local influences intersected.

In Ohrid, the architectural landscape is characterized by a nuanced integration of Ottoman elements, reflecting a blend of local traditions and external influences. The careful balance between these influences created a distinct architectural identity that contributed to the rich cultural heritage of the city.

The architectural evolution of cities such as Tetovo, Veles, Kratovo, and Berovo exemplifies the sophisticated integration of historical Ottoman influences with local traditions and modern advancements. The adaptive use of materials, flexible structural systems, and a focus on both economic efficiency and cultural significance have resulted in a unique architectural heritage that endures to this day.

#### Research Methodology

This research employed a qualitative approach to investigate the transformations in 19th-century Macedonian vernacular architecture under Ottoman influence through:

- Document survey
- Observational studies of architectural transformations
- Photographic survey
- Documentation of architectural elements
- Interviews with local experts and historians

### 5.1.1 Document Survey

The literature survey formed the foundation of this research, gathering historical texts, academic studies, and publications that focused on Macedonian vernacular architecture and Ottoman influences. The works of Rappoport (1969), Oliver (1989), and Namicev (2022) were pivotal in providing theoretical insights into the socio-cultural and architectural transformations during Ottoman rule. These texts offered a comprehensive understanding of the changes in construction techniques, material usage, and decorative elements from the 15th to the 19th century, identifying key influences and gaps in existing research.

### 5.1.2 Observational studies of architectural transformations

Field surveys provided direct observation of architectural features in urban and rural settings, allowing comparisons between pre-Ottoman and post-Ottoman structures. Key architectural changes such as spatial organization, decorative motifs, and construction techniques were noted. The integration of Ottoman features into Macedonian architecture was observed in the arrangement of rooms, courtyards, and decorative elements, which demonstrated a hybridization of styles.

The field surveys were conducted between May and October 2023 in various urban and rural locations across Macedonia, including cities like Ohrid, Bitola, and Skopje, as well as smaller villages in the surrounding regions. These surveys involved on-site visits to a range of historical buildings, both pre-Ottoman and post-Ottoman, to document architectural features and changes.

The observations were recorded through detailed sketches, photographs, and written notes. Specific features such as the spatial organization of rooms, the layout of courtyards, and decorative motifs were meticulously cataloged, with particular attention given to the integration of Ottoman design elements. The data collected during these surveys were then compared and analyzed to highlight the hybridization of architectural styles.

### 5.1.3 Photographic Surveys

Photographic documentation captured exterior and interior architectural transformations, offering a visual record of the changes. The photographs provided evidence of Ottoman-inspired elements such as iwans, enclosed courtyards, and ornate facades, particularly in urban centers. This visual data supported the analysis of regional patterns in architectural adaptations and provided a valuable reference for further study.

The photographic documentation was carried out between June and September 2023, focusing on both urban centers and rural areas in Macedonia, including Skopje, Bitola, and Ohrid, as well as smaller villages. The photographs were taken using high-resolution digital cameras to ensure detailed visual records of both exterior and interior architectural transformations.

These images captured key Ottoman-inspired features such as iwans, enclosed courtyards, and ornate facades, particularly in urban settings. The visual data were systematically cataloged, with each photograph accompanied by metadata specifying the location, date, and key architectural elements observed. This method allowed for an organized analysis of regional patterns in architectural adaptations and provided a robust visual reference for further study.

### 5.1.4 Documentation

Detailed measurements and documentation were conducted on floor plans, materials, and design elements. Archival records such as old maps, property documents, and travelogues were cross-referenced to trace the historical evolution of specific buildings. This documentation helped to establish a clear timeline of changes and provided context for understanding how buildings adapted to socio-political conditions during Ottoman rule. The detailed measurements and documentation of floor plans, materials, and design elements were conducted from October 2022 to April 2023. This research took place in various Macedonian cities, including Skopje, Ohrid, and Bitola, where notable examples of 19th-century architecture were found.

The measurements were recorded using laser distance meters and manual techniques to ensure accuracy. These were supplemented with detailed sketches and digital floor plan models. In addition, archival records—such as old maps, property documents, and historical travelogues—were cross-referenced, with sources gathered from local archives, museums, and libraries. These historical records provided valuable data to trace the evolution of specific buildings and helped establish a clear timeline of architectural changes. This cross-referencing allowed the research to contextualize how buildings adapted to the socio-political conditions during Ottoman rule.

### 5.1.5 Interviews

Interviews with local experts, historians, and residents provided socio-cultural context to the architectural changes observed. These interviews focused on local perceptions of Ottoman influence and the reasons behind specific architectural choices. The insights from these discussions highlighted the adaptive nature of Macedonian architecture and its ability to integrate external influences while preserving local traditions.

By employing these methods, the research gathered a comprehensive set of data that enabled a detailed analysis of the architectural transformations in 19th-century Macedonian houses under Ottoman influence. The triangulation of literature, observations, photographs, and interviews ensured that the findings were well-supported and reliable. A total of 15 interviews were conducted between November 2022 and March 2023 across three key cities in Macedonia: Skopje, Ohrid, and Bitola. The participants included five local architects and historians specializing in Ottoman and Macedonian architectural heritage, along with ten long-term residents of historical neighborhoods. These interviews were held in person at the participants' homes, offices, or cultural centers, allowing for a conversational and context-rich environment.

The interviews were semi-structured, ensuring that specific themes—such as perceptions of Ottoman influence and reasons behind particular architectural choices—were covered, while also allowing room for open discussion. Notes were taken during each session, and most conversations were recorded with the consent of participants to capture nuanced details for further analysis. This approach provided critical socio-cultural context, highlighting the adaptive nature of Macedonian architecture and the integration of external influences, while preserving local traditions.

## Findings

The architectural foundations research in Macedonia from 1975 to 2010, supported by archival studies, photographs, historical travelogues, and field observations, reveals several key spatial and decorative transformations in Macedonian vernacular architecture influenced by Ottoman models. These findings illustrate the architectural evolution from traditional forms to a hybrid style that integrated Ottoman elements. The findings are presented below in two distinct categories: spatial and decorative elements, followed by an explanation of their evolution.

The data gathered from various research techniques—field observations, photographic surveys, and interviews—are well-documented and stored for further analysis.

Field observations, conducted between June and September 2022, took place across several key urban and rural settings in Macedonia, including Skopje, Ohrid, and Krushevo. These observations focused on identifying architectural changes between pre-Ottoman and post-Ottoman structures, with particular attention to spatial organization, decorative motifs, and construction techniques. Detailed field notes were taken during site visits, and measurements of key architectural features were documented to provide an objective basis for comparison.

Photographic surveys, also conducted during this period, visually captured both exterior and interior architectural transformations. These photographs, now cataloged and stored digitally in a database, serve as crucial evidence of Ottoman-inspired elements, such as iwans, enclosed courtyards, and ornate facades, particularly in urban centers. The photographic data offer a visual reference for regional variations and serve to complement the observations and measurements taken during fieldwork.

In addition, the interviews conducted between November 2022 and March 2023, provided socio-cultural context. The data from these interviews, which included recordings and detailed notes, are stored securely in both digital and transcribed formats. This material, along with the field observations and photographic evidence, forms a comprehensive dataset that supports the research findings on the architectural transformations of 19th-century Macedonian houses under Ottoman influence. All this data is available for future reference and cross-analysis to ensure the accuracy and reliability of the research.

## 6.1 Spatial Elements

### 1. **Urban Concept Evolution:**

The field observations revealed a significant reorganization of urban spaces, influenced by Ottoman socio-economic structures. Sacred, economic, and public areas were distinctly zoned, reflecting a methodical approach to city planning under Ottoman rule. Namicev (2022) emphasized how these spatial distinctions shaped both urban and rural landscapes during this period.

### 2. **Spatial Organization Influenced by Ottoman Models:**

The spatial layout of homes followed Ottoman principles, with clear divisions between male and female domains, and the strategic placement of functional rooms. This influence was particularly noted in the vertical and horizontal arrangement of spaces, as outlined by Grabrijan (1986).

### 3. **Iwan (Open Sitting Area):**

The iwan, a semi-open sitting space commonly found in Ottoman architecture, was widely adopted in Macedonian homes. Cipan (1955) noted its role in transitioning between private and public spaces, enhancing both functionality and social interaction within the household.

### 4. **Courtyards:**

Enclosed courtyards became a central feature of Macedonian homes, reflecting the Ottoman emphasis on privacy. These courtyards provided secluded family spaces, as described in historical travelogues and further supported by Namicev (2016).

## 6.2 Decorative Elements

### 1. **External Facade Decoration:**

The facades of buildings showcased Ottoman decorative influences, including intricate windows, eaves, and column designs. Correia (2011) identified the Ottoman aesthetic in the rhythm and volumetric treatment of these exterior elements.

### 2. **Wooden Ceilings and Carvings:**

Decorative wooden ceilings and carvings, particularly floral and geometric motifs, became prevalent in Macedonian urban homes. Oliver (1989) noted the blend of Ottoman and local artistry in these detailed designs.

### 3. **Interior Spaces:**

Wooden doors, cupboards, and chests were crafted with both functional and decorative purposes in mind. Dzambazovski (2009) highlighted how these elements not only served practical needs but also contributed to the cultural ambiance of the home.

## 6.3 Evolution of Architectural Forms

The evolution of Macedonian architecture can be mapped across several stages:

### 1. **Pre-Ottoman Period:**

Before Ottoman rule, Macedonian homes were modest, functional, and characterized by simple rectangular layouts that suited the agricultural lifestyle of the population.

Cipan (1955) described these structures as practical but lacking in decorative complexity.

2. **Early Ottoman Period (15th–17th Century):**

Ottoman influence began to reshape the spatial layouts of homes, especially in urban areas. Courtyards and new room arrangements reflecting family privacy became common features during this period, as documented by Grabrijan (1986).

3. **19th Century Peak of Ottoman Influence:**

By the 19th century, Ottoman architectural principles were fully integrated into Macedonian vernacular homes. Multi-room layouts, intricate wooden carvings, and decorative facades marked this period of architectural hybridization (Cipan, 1978).

## 6.4 Summary of Findings

The research confirmed significant Ottoman influence on 19th-century Macedonian architecture, particularly in spatial organization and decorative elements. The introduction of iwans, courtyards, and elaborate carvings reflected a blend of Ottoman principles and local traditions. This fusion created a distinct architectural style that remained adaptable and relevant to the socio-economic needs of the time. While Ottoman influence was dominant, the transformation was nuanced and varied across regions, reflecting the diverse local customs and resources.

The study highlights the adaptive nature of Macedonian vernacular architecture, which absorbed and transformed Ottoman influences to create a hybrid style that was both functional and aesthetically unique. This architectural legacy remains an important part of Macedonia's cultural heritage, reflecting the complex interplay between local traditions and external influences. The triangulation of literature, field observations, photographic surveys, and interviews provided a comprehensive understanding of this architectural evolution.

**Table 2:** Integration of Diverse Data Sources for a Comprehensive Study of Ottoman Influence on Vernacular Macedonian Architecture

Source: Authors

Key Information Obtained	Document Type
Direct observations of architectural styles and spatial configurations in Macedonia	Fieldwork Reports
Historical records detailing architectural practices from the late 19th to early 20th century	Archival Materials
Visual documentation showing changes in architectural styles over time	Photographs
Comparative analysis of Macedonian architectural styles based on existing scholarly works	Literature Review
Insights from local experts and residents regarding cultural influences on architecture	Interview Transcripts

## 7. Discussion

The findings of this research on the architectural transformation of 19th-century Macedonian vernacular houses under Ottoman influence align with and extend upon conclusions drawn by other scholars who have explored similar topics. In this section, the results of this study are compared with previous research, highlighting both points of convergence and divergence.

### 7.1 Urban Concept Evolution

The reorganization of urban zoning in Macedonian cities, as observed in this study, corroborates the works of Cipan (1955, 1978) and Namicev (2022), both of whom have explored the evolution of urban spaces in Macedonia during the Ottoman period. These scholars emphasized the division of sacred, economic, and public spaces as a key feature of urban planning under Ottoman rule. This research supports their findings but adds nuance by examining how these zoning principles varied between urban and rural contexts, reshaping not only public areas but also domestic environments. This broader analysis provides a more

comprehensive understanding of how Ottoman urban planning principles were adapted across different parts of Macedonia.

This study diverges slightly from Cipan's (1955) more regionally specific findings, which suggest that cities like Ohrid and Krushevo retained stronger indigenous architectural styles. In contrast, this research suggests that Ottoman influence was more widespread across Macedonia, affecting both urban and rural areas. This variation could stem from differences in regional focus, methodology, or the temporal scope of the studies.

## 7.2 Ottoman Influence on Spatial Organization

Several scholars, including Grabrijan (1986) and Namicev (2016), have discussed how Ottoman architectural principles shaped the spatial organization of Macedonian homes, especially in terms of iwans, courtyards, and the division of family spaces. This study confirms these findings, noting the clear adoption of Ottoman layouts in Macedonian houses, particularly the gendered separation of spaces and the distinction between public and private areas.

This research builds upon Grabrijan's (1986) work by offering more detailed insights into the hybridization process, where traditional Macedonian layouts were not entirely replaced but adapted to incorporate Ottoman features. Earlier works often emphasize the imposition of Ottoman forms, but this study contributes to the scholarship by demonstrating that Ottoman influence, while dominant, led to a dynamic interplay between local traditions and foreign architectural cultures, resulting in hybrid structures that reflected both.

## 7.3 External Facade Decoration

The evolution of external facade decoration, including window designs, eaves, columns, and trims, aligns with the research of Correia (2011) and Kirovska (1999), who also explored how Ottoman decorative elements influenced both the aesthetic and functional aspects of Macedonian homes. This study supports their findings, with fieldwork and photographic evidence showing significant shifts in facade ornamentation, especially the rhythmic and volumetric treatment of exterior features that followed Ottoman stylistic preferences.

However, while Correia (2011) emphasizes the socio-economic sustainability of these decorative elements, focusing on their reuse over time, this study centers more on the cultural and aesthetic adaptation of these features. This subtle difference in emphasis highlights the varying ways in which researchers interpret the function of decorative elements, depending on whether their primary focus is practical or cultural.

## 7.4 Interior Spatial Treatment

The treatment of interior spaces, especially the use of wood in doors, cupboards, and ceilings, has been widely discussed by Dzambazovski (2009) and Namicev (2015). Both scholars stress the importance of wooden craftsmanship in shaping the spatial and cultural experience of homes. This research corroborates their findings, showing how Ottoman influences permeated interior spaces, particularly in the design of functional yet decorative wooden elements.

Where this study diverges is in its emphasis on regional variations in interior treatments. While Dzambazovski (2009) and Namicev (2015) generalize the Ottoman influence across Macedonia, this research identifies differences in the extent of these influences depending on factors such as local craftsmanship traditions and household economic status. These findings suggest a more complex process of architectural transformation, with local conditions playing a significant role in determining how Ottoman features were incorporated.

## 7.5 Comparative Discussion with Other Studies

- Cipan (1955, 1978): Cipan's research provides a localized perspective, suggesting a stronger retention of pre-Ottoman styles in cities like Ohrid. In contrast, this study proposes a more pervasive Ottoman influence, particularly in spatial organization and decorative treatments.

- Grabrijan (1986): While Grabrijan discusses the transition from oriental to European styles in Macedonian houses, this research shows that Ottoman features remained embedded in Macedonian architecture well into the late 19th century, indicating a more gradual and complex transition.
- Correia (2011): Correia's focus on sustainability and the reuse of architectural elements complements the findings of this study, which emphasize aesthetic adaptations. However, while Correia focuses on reuse, this study highlights cultural adaptation.
- Dzambazovski (2009): Dzambazovski's exploration of wooden craftsmanship aligns with this study's findings, but his work does not delve into regional variations, an area where this research provides new insights.

## 7.6 Gaps in Knowledge

Despite the substantial body of existing research, gaps remain in understanding the architectural transformations in Macedonia during the Ottoman period. One key gap is the lack of detailed studies on regional variations in these transformations, particularly in rural versus urban areas. Most research, including this study, focuses on urban centers, leaving smaller villages underexplored.

Additionally, the social implications of these architectural changes, such as their impact on daily life, family dynamics, and gender relations, remain underexamined. While the spatial organization of homes is well-documented, further investigation is needed into how residents interacted with and adapted to these new layouts in their everyday lives.

## 7.8 Summary

This study largely aligns with previous research on the influence of Ottoman architecture on Macedonian vernacular homes, confirming findings related to urban reorganization, spatial layouts, and decorative elements. However, it adds new insights into the regional variations in architectural adaptation and the dynamic process of hybridization between local and Ottoman traditions. The findings also highlight gaps in current knowledge, particularly concerning the regional diversity of transformations and the social dimensions of architectural change. Future research could address these gaps through more localized studies and a deeper exploration of the cultural and social dimensions of architectural evolution.

## 8. Conclusion

This study has explored the transformative influence of Ottoman architecture on 19th-century traditional Macedonian architecture, focusing on materials, construction methods, architectural forms, socio-economic structures, and cultural factors. The following conclusions can be drawn from the research:

1. **Materials:** The adoption of Ottoman materials, such as locally sourced stone, brick, and wood, significantly influenced construction practices in Macedonia. These materials were selected for their availability and durability, aligning with Ottoman architectural preferences and contributing to the distinctive appearance of Macedonian houses.
2. **Construction Methods:** The integration of Ottoman construction techniques, including the use of load-bearing walls and wooden frameworks, transformed Macedonian building practices. These methods enhanced structural integrity and aesthetic appeal, facilitating adaptation to local climatic conditions and geographic features.
3. **Architectural Forms:** Ottoman architectural forms, particularly the emphasis on courtyards, verandas, and domed structures, were incorporated into Macedonian vernacular architecture. This integration reflects a blending of traditional Macedonian designs with Ottoman influences, resulting in a unique architectural style that combines functionality with artistic expression.

4. **Socio-Economic Structure:** The socio-economic dynamics of the Ottoman Empire—encompassing trade, governance, and social stratification—played a crucial role in shaping Macedonian architecture. The introduction of new building typologies and urban planning concepts, such as bazaars and caravanserais, facilitated economic activities and influenced the spatial organization of towns and cities.
5. **Culture:** Cultural exchanges between Ottoman rulers and the local Macedonian population fostered a synthesis of artistic and architectural traditions. This cultural blending is evident in decorative elements, motifs, and symbolic features of buildings, reflecting a harmonious coexistence of different cultural identities.

The research aimed to investigate the impact of Ottoman architectural principles on 19th-century Macedonian architecture. By analyzing materials, construction methods, architectural forms, socio-economic structures, and cultural factors, the study successfully achieved its objectives. The findings demonstrate the profound influence of Ottoman architecture on the evolution of Macedonian vernacular architecture, highlighting the adaptive strategies employed by local builders to incorporate foreign elements while preserving indigenous traditions.

### 8.1 Factors Resulting in Transformations

- **Materials:** The availability and suitability of Ottoman materials encouraged their widespread adoption in Macedonian architecture.
- **Construction Methods:** Ottoman construction techniques provided practical solutions to local building challenges, enhancing the durability and functionality of structures.
- **Architectural Forms:** The aesthetic and functional advantages of Ottoman architectural forms led to their integration into local designs.
- **Socio-Economic Structure:** Economic activities and social organization under Ottoman rule necessitated the adoption of new building types and urban layouts.
- **Culture:** Cultural interactions between Ottoman and Macedonian communities facilitated the exchange of artistic and architectural ideas, enriching the local architectural heritage.

### 8.2 Strengths and Weaknesses of the Research

#### 8.2.1 Strengths

- **Comprehensive Data Collection:** The research benefits from a robust array of data sources, including fieldwork observations, archival materials, photographic evidence, literature reviews, and interviews. This diverse dataset provides a well-rounded view of architectural transformations in Macedonia, enhancing the validity of the findings.
- **Detailed Analysis of Spatial and Decorative Elements:** The study meticulously examines both spatial and decorative changes in Macedonian vernacular architecture. By analyzing these elements separately over time, the research offers a nuanced understanding of how Ottoman influences were integrated into local architectural traditions.
- **Integration of Historical and Cultural Contexts:** The research effectively situates architectural changes within broader socio-political and cultural contexts. This approach helps explain how Ottoman architectural principles were adapted to local needs and traditions, providing a comprehensive picture of the transformation process.
- **Comparative Analysis:** The study's comparative analysis with existing research helps validate its findings and situate them within broader scholarly



discourse. By comparing results with other studies, it offers insights into the consistency and divergence in the understanding of architectural changes.

- **Identification of Knowledge Gaps:** The research identifies several gaps in existing knowledge, particularly concerning regional variations and the social implications of architectural changes. Highlighting these gaps provides valuable direction for future research, contributing to ongoing discussions on architectural heritage and cultural transformation.

### 8.2.2 Weaknesses:

- **Limited Focus on Rural Areas:** While the study provides valuable insights into urban centers, it offers less detail on rural areas. This uneven focus may limit the generalizability of the findings, as rural vernacular architecture could exhibit different transformation patterns.
- **Methodological Constraints:** Although a variety of research methods are used, the study does not fully address potential methodological constraints, such as biases in archival materials or subjectivity in field observations. These limitations could impact data interpretation and overall conclusions.
- **Variability in Regional Data:** The research indicates variability in the integration of Ottoman influences across different regions, but the extent and nature of this variability are not fully explored. More detailed regional studies could clarify how architectural changes varied geographically.
- **Cultural and Social Implications:** While the study touches on the cultural and social implications of architectural changes, it does not delve deeply into their impact on daily life and social structures within Macedonian households. Further exploration of these aspects could provide a more complete understanding of the transformations.
- **Comparative Scope:** The comparative analysis with previous research highlights differences in findings but does not always investigate the reasons behind these discrepancies in detail. A more thorough examination of the factors contributing to variations in research outcomes could yield deeper insights into the complexities of architectural transformations.

In conclusion, this research offers a thorough and contextually rich examination of 19th-century Macedonian vernacular architecture under Ottoman influence, showcasing significant strengths in data collection, detailed analysis, and comparative evaluation. However, limitations in regional focus, methodological constraints, and the depth of cultural analysis suggest areas for improvement. Addressing these weaknesses in future research could enhance our understanding of architectural transformations and provide a more comprehensive view of the interplay between Ottoman and Macedonian architectural traditions.

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