The Ottoman Era Town House in Ohrid, Macedonia: An Analysis of Typology and Construction

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Abstract

Different factors conditioned the formation and the development of the Ottoman era towns especially in the Balkans. Pre-existing settlements, prevailing dynastic evolutions and changes as well as terms of their subjugation to new power were just some of these factors. Almost everywhere in their long forming, the urban settlements around the Mediterranean were marked with their multiethnic aspects and acted and lived together. The town of Ohrid was part of the vast Ottoman Empire, positioned in the lands of the Ottoman territory of Rumelia for almost five centuries. The town had a long urban history rooted deep down in the ancient times where sometimes the traces of the previous eras were 'covered' with the Ottoman presence, evident especially in the domestic and vernacular architecture. This article offers an insight into the Ottoman era patterns appearing in the town of Ohrid as an astonishing example of the Ottoman era vernacular house in the Balkans

Keywords: Ottoman era houses, Vernacular Architecture, Typologies, Plan typologies, Building materials, Ottoman Balkans

Introduction

Many scholars have long tried to define the Ottoman towns and the factors that formed and shaped them. Most of the Ottoman era settlements in the Balkans were often an adaptation of the Byzantine, (Hellenistic city), according to scholars like Cerasi, that later went through transformations or extensions. Speaking of Ottoman cities in the Balkans on the one hand means attempting to identify the diverse origins of these cities before the Turkish conquest but on the other, means to describe and interpret the developments that happened from the beginning of the conquest around the end of the 14th century till the beginning of the 20th century, when the Ottoman Empire collapsed as a consequence of World War I.²

Ohrid, in today's Republic of Macedonia was a town that within the borders of the Ottoman Empire was part of a regional architectural milieu. Topographically, the town was positioned along the important land route called Via Egnatia and built on a hill, beside a mass of water, the homonymous lake. The town possesses a long historical continuity going as far back as the ancient Lichnidos that later became known as Ohrid. In the Ottoman times, the town reached its peak in the urban and house development and if we take it as a case study, it is possible to find denominators in the architectural expression, both in the house plan typology and in the building-systems and construction materials that were contemporary for the period and the prevailing typologies in the Empire.

¹ Cerasi, M. (2005) La Città dalle Molte Culture. Milano: Libri Scheiwiller, p. 15

² Pinon, P. (2008) The Ottoman Cities of the Balkans. The City in the Islamic World, Volume 2. Brill.

The spatial development of the Balkan towns, especially those in the European territory of the Ottoman Empire has its roots in the Ottoman concepts, including the public institution of the pious foundations and the private and civic quarters and neighborhood systems. Typically, the physical shape of a town consisted of an organic and almost unsystematic accumulation of these quarters around specific and important centers or landmarks and the house appearance was thus influenced both by the formation of neighborhoods, the organic disposition of streets and the morphology of the terrain. All these common elements can be easily seen in the town confirming the continuity and the regional Ottoman era architectural influences and realizations as well as climate, geographic and historical circumstances under which it has been developing its physical appearance. In order to investigate the history of the urban settlements of Ohrid, a brief discussion on the characteristics of the Ottoman era town is necessary.

The Balkan Towns in the Ottoman Period

It is accepted that the art and culture of a nation is affected by those of earlier and neighboring civilizations and the Ottomans, even the Seljuks before them, were not exceptions.³ The Ottoman town, as it is defined according to Cerasi as a commixture of Levantine and pre-existing elements together with the traditions and innovations brought by the new Turkish rulers, cannot simple be ascribed and encompassed in the main historic categories of the generic 'Islamic city' or 'Oriental city', but it should be analyzed through the differences or the boundary's limits that we can refer to the studies on the comparative cultural geography.⁴ Moreover, far from old interpretations about the generic Islamic city, the research on the Mediterranean area, especially considering the Eastern Mediterranean and the lands close to it—as in the case of the Balkan peninsula—had always been affected by a sort of multiculturalism, related to the multiplicities of several population living in the areas as well as the coexistence of several religions.⁵

The lands of Rumelia—which included today's Turkish Thrace and the whole Balkan region, have always enjoyed great importance in the past, thanks to their geographical and strategic location and their function as a link between Asia and Europe. In every historical period, these lands have always been used by the most diverse populations and civilizations as an obliged passage between the West and the East. In the Ottoman era, three large main roads to the west connected the capital Istanbul with the Balkans, with the regions north of the Black Sea and with the central Europe. These road systems therefore played a fundamental role in all relations with the Western powers, both in terms of commercial exchange or military and strategic purposes. The western highway of the Rumelia road system, the so-called 'Left Road' was the road to Greece and to Italy. In the ancient times, it was named Via Egnatia, and was mainly a military road built and used by the Romans, and was for a long time the commercial road that directly connected—through the lands of today's Greece, Republic of Macedonia and Albania—the two capitals of the Roman Empire, Rome in Italy and Constantinople.

The Ottomans, upon their conquest of the Balkans, faced an existing culture and developed towns which left them in no need to build new settlements, even though sometimes they did. Following this case, it was more adequate to speak about Ottomanization rather than Ottoman cities in a strict sense, mostly regarding the urban forms that were mostly inherited

³ Ünsal, B. (1959) Turkish Islamic Architecture in Seljuk and Ottoman Times, London; Alec Tiranti.

⁴ Ivkovska, V. (2020) An Ottoman Era Town in the Balkans: The Case Study of Kavala. Routledge

⁵ Cerasi, M. (2005) La Città dalle Molte Culture. Milano: Libri Scheiwiller, p. 15

⁶ Cerasi, M. (1988) La città del Levante. Civiltà urbana e architettura sotto gli Ottomani nei secoli XVIII-XIX. Milano: Jaca Books, p. 20.

⁷ Yerasimos, S. (1991) Les Voyageurs dans l'Empire ottoman (XIVe-XVIe siècles). Vol. 117. Ankara: Imprimerie de la Societé Turque d'histoire

and rarely reconstructed.⁸ The Anatolian cities shaped during the Ottoman period with both their Islamic—Arabic counterparts and medieval cities of Europe were compared by a detailed analysis by Pinon in terms of streets, parcels (lots) and housing unit.⁹ He proposed a typology of urban texture based on, for example, street pattern, density of different grid types, and built density. First morphological specific of the early Ottoman era towns following the creation of the Empery was the absence of walls. The consequences of these openings were numerous. City plans were no longer conditioned by an imposed frontier that limited extension and implied that the layout of the streets had to pass through gates.¹⁰ However, this was not in the case of the Balkans where in many towns and cities, we actually follow the pattern of development of the street and urban layout within the city or town walls entered through gates positioned towards the main land roads leading to the bigger administrative capitals (Thessaloniki, Kavala, Ohrid, etc.).

The Ottoman era town consisted of morphological structures and urban fabrics organized of quarters, road layouts and urban facilities and residential fabric within it. It was also a multicultural town. However, the settlements were densely built and the dwellings were always well-oriented and positioned in such a manner on the plots in order to provide essential and comfortable living conditions. All the dwellings were facing good views and light. Because of these factors, the structures were always positioned on the street and gardens, where possible, were developing within the plot. Ground floors were always conditioned by the position of the plot on the street and the geo-morphological features of the site. However, the upper floors always tended to have more regular geometric plans. This was achieved by cantilevering the upper floors over the ground floor mastering the most regular geometric shapes of the floor plan. Following these laws, similarities in the urban neighborhoods and housing were created. Developing a full adaptation to the topography of the city, neighborhoods included extending roads, varies in width required by the lack of space. The narrow streets of the neighborhoods created interesting perspective with the houses located on both sides. ¹¹

In the Ottoman time, the family and the religion (mosque) were the two poles of attraction of social life of the common man. The *mahalle* (quarter) as an entity was directly in relation with the family life and its conjunction with the religious structure (mosque, *mesjid*) created the most important unity of the town. The appearance and the form of the houses were directly influenced by the quarters and their formation within the organic disposition of the streets.

The era of the Ottoman rule of the Balkans created rich town's society culture and its housing persisted and spread their influence upto the first decades of the 20th century. One is for certain, the Ottoman era houses in the Balkans were a mixture of Slavic, Macedonian, Armenian, and Greek ethnic elements. Most of the artisans coming from these communities were those who worked as master-builders and who undoubtedly imposed their personal influences in the final appearance of the dwellings together with the influences of the pre-existing cultures such as the Hellenistic one. This is why the Ottoman era house in the Balkans was a product of agglutinations of the multiethnic society.¹²

¹¹ Akın, N. (2001) Balkanlarda Osmanlı dönemi konutları. İstanbul: Literatür, p. 74. [12] Kuban, D. 2010. Istanbul, an Urban History: Byzantion, Constaninopolis, Istanbul: Türkiye İş Bankasi Kültür yayınları, p.74. ¹² Cerasi, M. (1998) "The Formation of the Ottoman House Types: A comparative study in interaction with neighboring cultures". In Muqarnas, 15.

⁸ Ivkovska, V. (2020) An Ottoman Era Town in the Balkans: The Case Study of Kavala, Routledge, London ⁹ Pinon, P. 2008. The Ottoman Cities of the Balkans. The City in the Islamic World, Volume 2. Brill.

¹⁰ Ibid

The Ottoman Era House

The scholars in the Balkans as well as in Turkey have widely worked on determining the house plan typologies of the Ottoman era houses. In different regions—even though different terms are used—still three (excluding the first most simple plan type) typologies are detected together with their variations. All of these classifications of the plan typologies are in relation of the hall or so called chardak, sofa, hayat. The mostly elongated corridor like space that is the link to all the other spaces on the floor. Its position determined three types of plans that can be seen in all of the regions of the todays Balkans and Central and North Turkey. These plans were used by booth Christians and Muslims with adaptations based on the requirements of the religion (meaning Muslims had separate quarters for the women while the Christians didn't have such segregation evident in their floor plans). These plan types also had additions in the form of pavilions and iwans.

Before analyzing in detail the case of Ohrid, from historical, economic and social point of view regarding the domestic architecture and its features, we should underline that similarities found in the house typology of the towns in the Ottoman Balkans, have come into being also because they belong to the same geographic region. Beside the common practice in which—especially in the literature about architecture in the Balkans—prevails a sort of 'nationalism' to differentiate the architecture of each country, the substantial truth is that the common factors that unite the domestic architecture in this vast area between North Greece, Republic of Macedonia, and Albania are much more numerous than the distinctive ones.

According to Tomasella in his research about the vernacular architecture within the Slavic population from South. 14

Very often the studies carried out on the architecture of tradition insist on specific regional typological peculiarities without emphasizing the overall linguistic unity of the whole study area. [...] What makes the prevailing typology in a city peculiar is the ability of the skilled teams of masons and master builders grouped in the *taife* (guilds) to rework, in a very personal way, rich schemes and styles derived from other experiences in combinations well integrated into the urban or rural context in which they were placed.

The Ottoman house in Macedonian presents a variety of typologies due to the climate and territorial conditions but in general, the houses except the ones in the case study presented here are quite modest and in the case of Ohrid, climate conditions as well as site's morphology were also among the determining factors. Usually, the residential house in these regions is based on two or three storeys, with compact plans and asymmetric formal shapes of the ground floor. The ground floor consists of a stone base of good work interspersed with wooden curbs; the upper floor in a wooden structure (*bondruk*) shows accentuated projections and generally has a double order of wide and regular windows. The pavilion roof is adorned with eaves, characterized by regular or curved tympanums connected to the façade walls (Fig.1).¹⁵

 ¹³ Eldem, S. H. (1984) Türk Evi Osmanlı Dönemi. Cilt.1. Türkiye Anıt Çevre Turizm Değerlerini Koruma Vakfı.
 ¹⁴ Tomasella, P. (2003) La Casa degli Slavi del Sud. Architettura Civile ed Edilizia domestica in Macedonia (XIX-XX sec.). Udine: Edizioni Goliardiche, pp. 34.
 ¹⁵ Ibid, p.70





Fig. 1: The Kanevche family house (Ivkovska, 2014)

Fig. 2: View of the Old town of Ohrid from the lake with the fort at the top of the hill (source: wikipedia.org)

The Urban Settlements of Ohrid in Ottoman Time

The Ottomans started relatively early the conquest of the lands towards Europe. Even the capital of the Ottoman Empire was relocated from Bursa to Edirne, in Thrace, before finding the last destination in Constantinople. Beginning from the era of Sultan Murat I (1362-89), the Ottoman army, starting from the banks of the river Maritsa in Thrace, conquered all the Macedonian and Greek territories. The entire Mora Peninsula was also incorporated in the newly seized Ottoman territories. Macedonia became an Ottoman province and entered the administration of the Beylerbeyi of Rumelia. 16

Situated on the shores of Lake Ohrid, the town of Ohrid is one of the oldest human settlements in Europe. Even though built mostly between the 7th and 19th centuries, the town was already known in the ancient times as Lichnidos. In the 4th century BC, under the domination of the Kingdom of Philip II of Macedon, it was an important center that was important even in the Roman time.¹⁷ The particular position of the town that goes from the 10th century military fortress built by the Tsar Samuil on the top of the hill—where the citadel called Gorni Saraj is located—down to the shores of the homonymous lake, makes Ohrid a truly unique site (Fig. 2).

Ohrid's architecture represents the best preserved and most complete ensemble of ancient urban architecture of South Eastern Europe. Slavic culture and literature spread from Ohrid to other parts of Europe and seven basilicas have thus far been discovered in archaeological excavations in the old part of Ohrid. These basilicas were built during the 4th, and 5th centuries and the beginning of the 6th century and contain architectural and decorative characteristics that indisputably point to a strong ascent and glory of the town. The structure of the city nucleus is also enriched by a large number of archaeological sites, with an emphasis on early Christian basilicas, which are also known for their mosaic floors. The convergence of the well-conserved natural values with the quality and diversity of its cultural, material and spiritual heritage makes this region truly unique. ¹⁸ As stated in the UNESCO web site:

The old town of Ohrid is distinctively preserved, authentic ancient urban entity, adjusted to its coastal lake position and terrain, which is characterized by exceptional sacred and profane architecture. The architectural remains comprising a forum, public

¹⁶ Akın, N. (2001) Balkanlarda Osmanlı dönemi konutları. İstanbul: Literatür, p. 70.

¹⁷ whc.unesco.org

¹⁸ Ibid

buildings, housing and sacred buildings with their infrastructure date back to the ancient town of Lychnidos (the former name of the town). The presence of early Christian architecture with the lofty basilicas from 4^{th} to 6^{th} centuries, together with the Byzantine architecture with a great number of preserved sacred buildings of different types from 9^{th} to 14^{th} centuries, is of paramount importance and contributes to the unity of the urban architecture of the city.

The overall coherence of the property, and particularly the relationship between urban buildings and the landscape, is vulnerable to the lack of adequate control of new development. Special emphasis regarding Ohrid's old urban architecture must be given to the town's masonry heritage. In particular, Ohrid's traditional local influence can be seen among its well preserved late-Ottoman urban residential architecture dating from the 18th and 19th centuries. The limited space for construction activities has led to the formation of a very narrow network of streets.

The town of Ohrid is reasonably well preserved, although uncontrolled incremental interventions have impacted the overall form of the monumental urban ensemble as well as the lakeshore and wider landscape. These are also vulnerable to major infrastructure projects and other developments.

The originally residential function of some buildings has changed over time, as have some of the interior outfitting of residential buildings, which were altered to improve living conditions. While reconstructions often used materials identical to those used at the time of construction, new materials have also been used on occasion, which presents a threat for the authenticity of the property. ¹⁹

House Plan Typology

The traditional house in Ohrid can be considered as a real building prototype for the entire regional area, where the usual building elements, such as stone and wood, which constitute the structural part of the house, generate an informal free plan in the interior that goes beyond the simple appearance as picturesque to become a real building type. The Ohrid's vernacular architecture represents the traditional civic architecture of the town presented with the Ohrid town house. This house can be characterized as a regional variant of the Ottoman era type of urban house with specific indigenous characteristics, which are specifically related to the spatial plan and structural details. The climate imposed this house's spatial organization separated in two spaces—a winter and a summer apartment. The house elevations were organized in such a manner that every level received enough light, air and vista (Fig. 3).



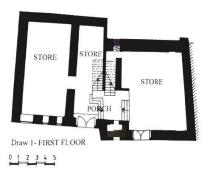


Fig. 3: Robevci house, double house in Ohrid **Fig. 4:** Floor plans of the Robevci house (split belly type) Source: Ivkovska, 2015

¹⁹ https://whc.unesco.org/en/decisions/7366/

²⁰ Tomasella, P. (2003) La Casa degli Slavi del Sud. Architettura Civile ed Edilizia domestica in Macedonia (XIX-XX sec.). Udine: Edizioni Goliardiche.

 $^{^{21}}$ Чипан, Б. (1982) Старата градска архитектура во Охрид . Chipan, В. [The old urban architecture in Ohrid] Скопје: Македонска книга

The house had its ground floor typically encroached by the streets and the lot (Fig. 4). The vertical distribution of the space was made through stairs positioned in the ground floor that leads to the upper floors; onto a space called *chardak* (sofa, hayat, hall). This was the space from where other rooms were accessed. This hall allowed different distribution of the space around it with adjunctions of spaces creating different plan typologies (Fig. 5).

The hall that is also called hayat, or chardak, is an element that prevails in the domestic architecture of the Ottoman Muslims as well and was used as an element in all its territories. Rumelia and its towns were not an exception.²²

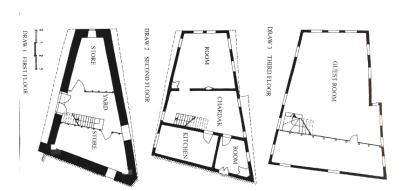


Fig. 5: Kanevche house plan with the inner hall and distribution of the space on both sides Source: Ivkovska, 2015

As a result of the Ottoman domination in the Balkan region but thanks to the genius of the local master builders, typological analysis of the spatial organization of the 19th century urban house in Macedonia and those of the neighboring countries pointed out the presence of different basic types throughout the territory. The only exception are the very numerous 'L' type house in Macedonia, which was the most frequently used house type in Ohrid's civic architecture. The type resulted from the urban milieu of Ohrid and different conditions of the lot, the position to the neighboring dwellings, etc. The features of this type are the result of different shapes and dispositions of the hall (*chardak*) (Fig. 6) and the porch in different floors. Another typical solution for Ohrid residential architecture is the placement of the so-called winter kitchen on the mezzanine level but its most specific feature is its development through three or four floors.

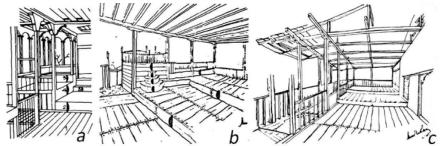


Fig. 6: Multi-level floor of the balcony (čardak): a) Debar house; b) Muslim house in Ohrid;c) Christian house in Ohrid.

Source: Хаџиева Алексиевска, Мерки, Антропоморфност и модуларнипропорции кај старата македонска куќа, Скопје: Студентски збор, 1985.)

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²² On detailed evolution of the Macedonian vernacular house floor plan and the concept of chardak see: Ivkovska, V. (2016) Reinventing Vernacular Traditions to Reveal National Identity: A Case Study of the "Macedonian Village" in TDSR vol.XXII number II. P. 73-7; on the chardak in the Balkans see: Bing, J. (2018). Chardak, Between Heaven and Earth: Tracing Vernacular Space in Balkan Architecture. Procyon Lotor Press.

The Ohrid house is often a building that grows in height, due to the lack of frontal space. Its house plan types are usually asymmetric as a result of their ground floors adjusting to the terrain. A particular architectural expression of the house included a specific treatment of the yard, which became a part of the interior of the house, while the ground floor level of the house was closed towards the street. In this way, the cellar and the summer kitchen remained in the vard, and the winter residence was on the mezzanine level. The floors of the summer residence were opened to the street, towards the sun and the Ohrid Lake.²³

Construction System and Building Materials

Regarding the applied building techniques, the Balkan authors believe that material and technological base of a traditional Balkan house is found in the Byzantine masonry techniques, as well as in the Slavic techniques of building with wood. Besides, a great similarity can be found between the houses from Greece (Kastoria, Veria) and those from Galičnik in Macedonia, where we can search for the origin of the Macedonian rural house.²⁴

The traditional town houses of Ohrid share various traditional building materials. The structures were built of two main materials, stone and wood. Stone was used for the massive structural system in the ground floors and the wooden construction, the so-called bondruk system (Fig. 7) was used for the upper floors of the house.²⁵ In this way, the houses responded in the best way to the yearly climatic changes.²⁶

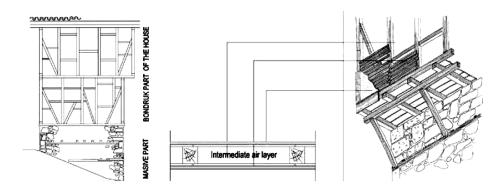


Fig. 7: The wooden structural system of the houses Source: Tomovska, 2016

Plaster was applied to the exterior surfaces of the wooden (bondruk) wall frame that was covered with wooden lattices as a surface for applying the plaster (Fig. 8). This plaster was made of different materials: hydrated lime or dry pulverized lime, river sand, and a small amount of a material with pozzolanic features (ground volcanic stone, powder dust from clay tiles or pozzolanic earth). ²⁷ Glass was used for closing the windows after this material became commonly used in the Balkans during the 19th and at the beginning of 20th century.

²³ Tomovska, Radivojevic. (2016) The role of the Master-builders in Development of the Traditional Ohrid House. SAJ Vol. 8, 2016, No. 1.

²⁵ J. Хаџиева Алексиевска, Мерки, Антропоморфност и модуларни пропорции кај старата македонска куќа (Скопје: Студентски збор, 1985)

⁶ Чипан Борис. (1982) Старата градска архитектура во Охрид. [The old urban architecture in Ohrid] Скопје: Македонска книга

²⁷ Tomovska, R. (2016) The role of the Master-builders in Development of the Traditional Ohrid House. SAJ Vol. 8, 2016, No. 1.



Fig. 8: Wooden lattices applied over the wooden frame in the houses in Ohrid Source: Ivkovska, 2004

The massive system was constructed of stone walls, built of stone blocks and bonded with mud, which was the most common binder, although there are examples where lime mortar was also applied. It represented a very durable structure. On the other hand, the *bondruk* wall was constructed of basic timber frames consisting of post and beam structures with trusses or braces supporting the corner points. This type of timber frames was widely applied, since it allowed quick building of houses and the timber material did not have to be of a top quality.²⁸

Conclusion

Ohrid, being a town of what was once known as Rumelia has strong continuity in the past starting from the ancient times passing through the Hellenistic, Roman, and Byzantine, up to the Ottoman eras, when it underwent drastic physical transformations un-linked to those from the pre-Ottoman times. The town located on a hill had its fort built before the Ottoman arrival in these lands. The town under Ottomans had its specific urban development that strictly followed the morphology of the terrain in creating the circulation of the urban space. However, on the hill in Ohrid, the majority of its inhabitants were Christians, while the Muslims lived mostly in the flat lands below the hill and close to the bazar (çarşı, чаршија) and the central mosque. The physical manifestations of the dwellings had a lot to do with the specifics of the terrain they were built on. The organic distribution of the streets ending with the typical dead ends, and the perpendicular secondary stair like street network connecting the major arteries were typical Ottoman era elements in the urban development of the town. The street patterns directly influenced the house plan typologies, having limited space in the ground floors that also influenced irregular ground plan layouts and upper floors with attempts to create more geometrically defined spaces with the use of cantilevered eaves over the ground floors. The hall that is also called *hayat*, or *chardak*, is an element that prevails in the domestic architecture of the Ottomans and was used as an element in all its territories. Rumelia and its towns were no exception.

In terms of construction materials, the dwellings in the settlement follows patterns; ground floors were built in massive stone masonry with mortar, and the upper floors were

²⁸ Radivojević A., Roter Blagojević M., Rajčić A. (2014) "The issue of thermal performance and protection and modernization of traditional half-timbered (bondruk) style houses in Serbia." Journal of Architectural Conservation 20-3: 209-225

built in light wooden structure frames covered with plaster. This however was the trend throughout the other parts of Rumelia where similar or same examples are found (Northern Greece, Bulgaria, Republic oof Macedonia, South Albania). The light wooden floors built of wooden frames, covered with lattices and plaster were and are common techniques for the whole region of the afore-mentioned countries.²⁹ However, the important distinction is the height of the town houses in Ohrid compared to the other urban centers like Plovdiv in Bulgaria where they are barely more than two story high. Even though located on a small hill and not in high altitudes with steep terrain and severe climates like the towns of Veria, Kastoria or the villages of the Reka Region in Macedonia such as Galichnik where the dwellings had to aim towards the sky,³⁰ the Ohrid town house presents itself in a tall manner, with three and even four floors.

The old town on the hill keeps its Ottoman era appearance till this day, and even though scholars tend to take sides on whether these dwellings had Hellenistic, Byzantine, Ottoman, Greek, Macedonian roots, one thing is certain; the settlements' civic architecture that we have in evidence today was built in Ottoman times, by the local Christian builders using local materials suitable for the climate and strong local artistic mark.

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²⁹ A paper was presented at the Inter-ISC'18 ICOMOS Inter-ISC Meeting and Colloquium on Anti-Seismic Vernacular Heritage of Anatolia and Beyond in Kastamonu, Turkey in 2018 where Ohrid was taken as case study together with the town of Kavala in Northern Greece. In the work the constructive techniques of the houses in both towns were analyzed through a comparative method after which conclusions were drawn. See: Ivkovska, V. (2018). Typology And Constructive Analysis Of The Traditional Ottoman House – The Cases Of Kavala And Ohrid. Proceedings of the Inter-ISC'18 Anti-Seismic Vernacular Heritage of Anatolia and Beyond. (pp. 24-40) ³⁰ Ivkovska, V. (2019). Aiming Towards the Sky: The Vernacular "skyscrapers" of the South-West Balkans.

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