



FEATURES DESIGN AND TRADITIONAL ARCHITECTURE OF THE TURKISH EASTERN BLACK SEA HOUSE

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Received: 25.10.2016, Accepted: 08.11.2016

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Abstract

In many regions of Turkey there are architecturally important constructions. With its own unique natural surrounding and architecture, the Eastern Black Sea region shows differences from constructions in other regions. Also, local craftsmen and folk in the district constructed residences compatible with harsh geographical conditions and addition to those various architectural structures by detailing with their skill and knowledge. Those unique structures, which is constructed entirely with own resources of the region from building material to work force, also ecologically increased in value in the region. Due to this reason, Eastern Black Sea Region has an important place in both housing settlements and housing architecture arrangements regards to sustainability and ecology. Therefore, the evaluation of the material usage and construction system through examining the traditional Eastern Black Sea Region houses and by giving as detailed as possible information about traditional houses in Black Sea district, the investigation on current state of those houses will contribute to transfer to the next generations.

Keywords: The Turkish Black Sea Houses, Architecture, Traditional, Design

TÜRK DOĞU KARADENİZ EVLERİNİN GELENEKSEL MİMARİSİ ve TASARIM ÖZELLİKLERİ

Özet

Türkiye'nin birçok bölgesinde geleneksel mimari açısından önemli yapılar bulunmaktadır. Doğu Karadeniz Bölgesi de, kendine özgü doğal çevresi ve mimarisi ile diğer bölgelerdeki yapılardan farklılıklar göstermektedir. Ayrıca bölgedeki yerel ustalar ve halk, zorlu coğrafi koşullara son derece uyumlu konutlar ve bunlara ek çeşitli mimari yapıları, kendi beceri ve bilgileriyle detaylandırarak inşa etmişlerdir. Yapı malzemesinden, iş gücüne kadar tamamıyla yörenin kendi kaynakları ile oluşturulan bu özgün yapılar, bölgede de ekolojik açıdan da önemli bir değer kazanmaktadır. Bu sebepten dolayı Doğu Karadeniz Bölgesi, gerek konut yerleşmeleri ölçeğinde gerekse konut mimarisinin düzenlenmesinde sürdürülebilirlik ve ekolojik açıdan oldukça önemli bir yer tutmaktadır. Bu nedenlerden dolayı, bu çalışmada, Doğu Karadeniz Bölgesi geleneksel konutların incelenmesi, malzeme kullanımı ve yapıım sistemleri açısından değerlendirmelerin yapılması, karadeniz yöresindeki geleneksel konutlar hakkında mümkün oldukça detaylı bilgilerin verilmesi, bu konutların mevcut durumlarının tespitinin yapılarak gelecek nesillere aktarılması amaçlanmıştır.

Anahtar Kelimeler: Türk Karadeniz Evleri, Mimari, Geleneksel, Tasarım

1 Introduction

Turkey has a significant history in architectural feature. The traditional houses form an important part of the architectural history. Terms "being passed down", "being tried before" and for this reason "being preferred", "being handed down from one generation to another" are accepted as key words in the tradition term. If we take these definitions into account within the context of the architecture, traditional usage format, traditional construction methods, traditional structure, traditional user, traditional material and traditional construction in a way covering all of those are mentioned [1]. In many regions of our country there are significant constructions for traditional architecture. The eastern black sea region also shows great importance in the diversity of the traditional architecture. The unique architecture of the region is separated from other regions with the effect of climate and

geographical structure. The architectural structure of the region is formed as a result of local folk merging materials found in the region with their own culture and accumulation. Most of these houses reached the present day. One part is condemned to collapse because of the neglect and the indifference. Besides, the characteristic texture of the region's local houses in rural settlement are spoiled because of new constructions formed with materials that doesn't care about regional conditions [1].

1.1 The General Features of the Eastern Black Sea Wooden Architecture

If we study traditional housing structure of the region, the presence of architectural identity on both the housing structure and the housing application is felt. The traditional architecture holds a rich structure in material, design and construction system in terms of continuity and ecology. It is

important to select materials that do not harm the nature, are local, are harmonious with climatic conditions, are heat permeable, don't need much energy during the application [2]. The important factors in Eastern Black Sea Region's unique architecture are its economic, cultural, social and natural structure. The real purpose here is meeting the needs with local facilities by dwelling on the society's needs and problems. As to other regions, it is quite different in respect to its natural structure. This situation reflects on the settlement style and architecture of the region, unites it with natural environment and exposes its own unique architectural character [3].

Even though it shows difference according to ethnic groups the cultural and social structure of the folk has many common sides in traditional life. It can be told from house plan features that the social and cultural structure shows similarities greatly on a large scale, even in settlements associated with each other, especially the ethnic groups sustaining their life in the coastline. It is understood that houses in the area extending from east side of Hopa to west of Trabzon derive from one plan type and the difference results from the change in the number of residence according to the size of the family. The skill showed in the solution of structural problems of standing traditional architectural samples indicates that the structure architecture endures old times. While the interior section is embroidered roughly, the coast sections is seen to be embroidered with carvings and motifs on the pillars, beams and dividing walls [4].

The form of the housing settlement in the region is scattered. Sometimes there can be distances of two kilometres between the houses. To reach from one house to another it is necessary to go 15- 20 minutes and more. The uneven nature of the land makes it hard to contact between houses [5].

The coast section has a privilege over interior section in terms of architectural features. The plan types are quite distinct, venue sizes are more stable, the construction system is more developed. The plans generally are orientated according to the land slope, the view and the sun are not taken into account. The front side is always the one to overlook the slope no matter what direction it is. The main component of the plan scheme is the kitchen which is defined as playpen or magnificent. The kitchen is in the extent enough for meeting the other house functions. This place is also used to do chores like cooking, sitting, eating. There is open-sided or close porch in the side that overlooks the view. While some rooms of the house are directly connected to the kitchen, the other parts are connected with the porch [5].

Mainly three types of construction system are used in the region. The first of them is wooden construction stacking system. The stacking construction system formed by wood imbricated horizontally without the use of pillars is mostly encountered in interior parts and plateaus where the wood is plenty. The second construction system is wood assembled or framed construction system. This construction system which is expressed with different names like assembled, wood, frame, wood framework is applied using pillars. The third one is mixed construction system. In those constructions generally basement is constructed by raising basic walls built with rubble stones and wood assembled floor is constructed over this [6,7].

The wood stacking systems is the construction system which generally is seen in inner parts where the forests are abundant in the East Black Sea region. The whole exterior and interior walls are built by intertwining. Over the stone base bonded until the basement, the technique is completed with the attachment of horizontal wood components left in the trunk condition or shaped with pit saw with methods like wolf neck,

notching neck, verging neck and black neck in the corners. The wood components in this masonry are seated in overlapping position by leaving length of 20-30 cm; there are no other conveyor component in the system. The walls in the wood stacking system built with techniques of entirely crossing and without nails [5].

This system, which is completed with interior and exterior walls bonding together, is hard to make changes in the plan scheme, however it is possible to move somewhere else by disassembling the constructions. In the region it is seen that there are mosques that bears qualification of a monument apart from residences, spars and barns with wood stacking system.

For the purpose of insulation from humidity the conveyers are located vertically up to a certain height over the stone wall bases in wooden framework system. If we compare the wooden framework with the wood stacking system, it is seen that the conveyor system gets lighter, the cross-sections of the materials used get smaller and most importantly enables the plan schemes to be flexible. Firstly, the floor beams, which has corners seated with the wolf neck tenon and the cross-section of 15x15 cm, are put into place in this system [5]. What determines the floor elevation is the heights of the pillar; the pillars are formed with the detail of the pillars overlapping the floor beam. The top beams are placed over the pillars with overlapping details. This construction system is shaped in respect to the heights of the pillars. The wooden framework systems can be divided into four groups as the wooden filling, the eye filling, the filling with amulet and "çakatura". Even though the exterior wall systems differ, the interior walls made in the region generally are made with the wooden filling system and the lathing system [5].

The Eastern Black Sea climate is the most substantial factor effecting the architectural form of the constructions. It is observed that the roofs are made in three forms in the region. These are double, triple and quartet sided roofs. The attic is kept high as it is used as a storehouse, the grated windows are put with the purpose of the ventilation [5].

1.2 Differences Separating Black Sea Houses from each other

Some researchers classified Anatolian dwellings according to the climate, the geographical region and the materials used. Kuban separated Anatolian house architecture into seven regions considering the methods and materials besides the climate; stone housing architecture: The South-eastern Anatolia region, stone architecture with bonding timber: The North-eastern Anatolia region beyond Erzurum, wood-framed home architecture: especially Niğde and Kayseri area (old Cappadocia) of the Central Anatolia region, adobe architecture: villages and small cities of The Central Anatolia region, half-timbered (its conveyor system is filled with wood, adobe, its ground floor is multitude stone.) construction system: The Eastern Black Sea region, straight roofed cubic stone architecture: The Aegean and Mediterranean, stone architecture: between coasts of Anatolia and central plateau, reaching from around Sivas to the west and from the interior Aegean to slopes of Taurus mountains and also seen in The Balkans [8].

The topic, when the expansion and habitation areas of the civilizations in the Anatolia are observed, it is understood that the differences in the architecture result from different ideas and livings that emerged during this process. Due to being a bridge between world civilizations, the Anatolia brings the different architecture of Anatolian houses as a result. The architectural differences with small nuances reveal in the

Black Sea, Aegean, Mediterranean and Marmara. For instance, the construction architectures reflecting the Byzantine in the Eastern Black Sea, the Pontus, the Armenian, the Laz and partly Georgian in the Central Black Sea are encountered [6].

The differentiation of Laz houses from the Hemşin, Georgian and Anatolian houses in interior and exterior spaces is the concrete evidence of the decisiveness of different cultures on the construction element [6]. The Georgian houses mainly are wood based, the Hemşin houses are stone based, the Laz houses are stone based and wood based not much as the Georgian houses [6]. The differences in the Laz houses result from Serenti, Bagen, yard at the outdoor spaces and rooms, connections between rooms at the interior spaces. The houses are in an order harmonious with the environment. While determining the sizes and forms of the houses, the economic reasons don't have a huge role in the Laz houses. However, the differences arise in the context of affectation. Because the construction formation is affected by natural conditions, the uneven land of the East Black Sea region influences construction system of the constructions and creates differences in general formation. That forms its unique construction system. Due to this reason, it is necessary to take differences between the Laz, the Georgian and the Hemşin houses naturally [6].

2 The Construction Materials

The stone and the wood, which are the oldest and natural material, are used together as the construction materials in the traditional houses the region. These materials were also effective in the formation of the construction methods. Having a rainy climate, the region causes clay to be used as a binder not as adobe [1]. The stone material is used without exception on the walls that separates the living floor from the ground floor in the countryside of the region, on the walls of barns and storage spaces.

Generally, in the production of the construction hard, resistant to humidity and temperature changes and long-lived non-perishable chestnut is preferred. While this material is preferred more in east of Trabzon, Rize coast and inland areas, the trees such as elm, beech, spruce are preferred in the west of Trabzon and in Giresun [9].

3 The Construction Methods

The most original examples seen in the region are wooden frame (chassis) systems in the eastern Black Sea where the wood has a wide range of applications. The frame geometry and materials in the filling allows different external appearance of the constructions in the region. The stone walls are another example of the stacking system seen in the region. The wood and stone materials found all over the Eastern Black Sea region and their tested durability have led to be the main element in constructions for centuries, the walls which are built with these material can be grouped under four main headings as wooden frame walls, massive walls, wood stacking wall and mixed walls.

The first of these is the wooden stacking system. It is the conveyer system that is built without pillars by overlapping the construction materials horizontally. In the Eastern Black Sea regions such constructions encountered in inland areas and generally plateaus where the wood is common.

The construction system called assembled in a part of the region is called skeleton or carcass in another part. Whatever the name is the basic rule is to use the conveyer elements which transmits all structural load to the base walls vertically to the reverse of the wooden stacking system in this type of

construction system. The basement is obtained by raising the base walls generally made with 50 cm thick rubble stone. The assembled construction system is built after ending of the base walls at a certain level. According to filling techniques the side is settled in three ways in assembled constructions.

4 The Black Sea Houses

4.1 The Rize Houses

In Rize stone and wood is generally preferred as construction material in the traditional residential architecture. The preference of the wood in the region is related to its being a construction material which is easily found and is easily processed. The use of resistant species such as pine, spruce, beech are common. The pine in the interior section, chestnut in coastal areas form the most preferred construction material because of the easy procurement in the close environment. Apart from these, the less abundant species like the walnut, the oak, the elm also included. Alongside the wood, the construction material used in the second degree is the stone because it is less found. In addition, especially in the coastal areas the terracotta is also used like bricks, tiles on the roofs and chimneys.

The region caused the folk's livelihood to be stockbreeding, the lower sections of the house to be used as stable. The folk's collective living habits in the form of large families is the main reason for the construction of grant houses with multi-rooms. The kitchen section with a large cooker is the main living area of the house as it remains warm during the day. Through the doorway or the hall you can move to the rooms. The built-in wardrobes, ceiling and bathroom decorations are among the other striking details [10].

The Çamlıhemşinlis, the upper portions of the mansions which are three-floored and made from stone are often wooden embroidered. In some of the ground floors of the mansions, the stone handwork is used, the top floors are done by stuffing wood among stone with the stone filling method. In some houses the stable is made of stone, the top floors were built with wooden material by applying neck crossing technique. The shared aspects of these constructions; generally, they all have central chimney and kitchen systems, the existence of the bathroom in the wide rooms. Most of the iron used in the windows and doors of the mansion were brought from Russia as raw and afterwards the workmanship is made by Armenian masters. The gold-plated door handles, the embroidered iron and the special paints imported also from Russia are among the materials used in the construction of those historic mansions [10].

The Findıklı rural architecture generally are planned as two-floored and the ground floor is arranged as barn, the first floor is arranged as the living space. The most important feature of this houses, our cultural heritage, is that they built with stone filling method with wooden framework called "eye filling" or "stoneeye" in local dialect. Firstly, small rectangles using the crossing systems with clipping planks one another in the image of a rack system. The stones placed between those parts are large pebbles that are collected from the streams and shaped by cutting. The main cause of selecting for this type of stone that their surfaces are bright and flat, ensures that the aesthetics nature of architectural construction. After the stone-laying process, with timber framing the spaces between the filling stones are plastered with a kind of sture for insulation purposes [10].



Figure 1. The mansion of Hacaoglu / Fındıklı [11].

4.2 The Giresun Houses

The oldest known settlements in the city are the Giresun Castle and the Zeytinlik archaeological site. To keep the records of the registrations of immovable cultural property situated within the protected and determination of the missing ones were decided in 1986 [12].

The architectural features of the Zeytinlik houses has been examined as the side, street-yard, the plan the details and construction systems. Firstly, taken into account according to the way located on the street, later the typologies have been created in terms of plan and side properties. The sloping topography determined the entrances of the house. The entries are studied as the street-garden and the garden-home relations in terms of settlement characteristics [12].

Generally, the houses are two floored in the work area. As the ground can be + 1 floor, in the form of basement + ground+ top floor. The height of the basement can be shorter than the normal floors and as it is seated on the slope it can be perceived as a half-floor. There are also houses with ground + 2 floors. This type houses are on the streets with little slope [12].

The streets are generally higher than the level of the ground floor of the house and garden level. The entries of the house are in two types: the single entry from the street, the single entrance from the garden and one entry from the street another from the garden according to street-garden-house relationship [12].

The gardens of the houses hold an important part in the housing settlements. The houses were built in the gardens of different sizes. The garden space separated by a high wall from the street is a cool, quiet and a place where the household carry on their daily lives [12].

The entry to the houses is usually made through the garden. The number of houses with an entrance on the street is very few. In certain examples, the separation of the entrance from the floor and the formation of the basement are provided by raising the ground floor as a half floor. The balcony on the upper floor covers this entry sill. If there are no bow-balcony or balcony on the house, the top of the entrance is left completely open. If the houses are not raised from the ground, the entrances are on the same level with garden. If there are no gardens at the houses, the entry is on the street level. If there is only one step levelled height difference between the interior and the exterior spaces of the house, there is no basement in the house [12].



Figure 2. The Giresun Zeytinlik Houses[13].

4.3 The Artvin Houses

It is possible to say that the all together position of the houses improved the village people's friendships with each other, feelings of neighborhood, solidarity, sincerity and trust. Generally wooden architecture is dominant in Artvin village houses. Traditional Artvin village houses are two floored. In the downstairs there are two winter rooms and a shed. Because of sloping nature of the land, one or two sides of downstairs generally is buried under or is surrounded with a too thick stone wall. At least two sides are stone walls. That enables homes to be warm in the winter. The ceiling, the floor and the middle part are generally wooden. The upstairs has two or three rooms, a granary and a wide or narrow hall. The granary and rooms are made from joint wooden planks. It is possible to come across with rooms which we call as "Çakadura" in some houses. The "Çakadura" room is formed with perpendicular planks on all sides of it [14].



Figure 3. Artvin Houses



Figure 4. Artvin houses.

4.4 The Trabzon Houses

In the past, while forming the traditional houses, the local people inform the craftsmen in the region with their suggestions in the direction of their needs, the craftsmen forms the traditional housing architecture with these suggestions and their own experiences. Those plan types and techniques are formed in the most appropriate way for the region after years of trying by craftsmen. In the lives of the local people there are no changes, the ways of life are changing very slowly and take many years. Thus, the plan schemes developed by the master don't change for many years [1].

The slope of the land in the Sürmene region is the main factor shaping in the residential form. The houses are built in two or three floors depending on the state of the slope. While the first floor of the houses is used as barn, the top floors are used as the living floor. In some places where the slope is very plenty a mezzanine gained from the slope between the barn and the living floor is created [1].



Figure 5. The House of Dilaver, Village of Aksu, Sürmene [15].



Figure 6. The Mansion of Haşim Ağa [16].

4.4.1 The Use of the Floors on The Traditional Housings

The barn floor: The barn floor is formed in the elevation acquired from the slope in down side of the slope in the regional houses where the slope is excessive. The walls of barn are formed from the carved stone, the rubble stone and the cut stone walls by using wall stacking system and the walls vary between 50-90 cm. Due to the inclination of the wall it is usually buried under the soil entirely. The barn is usually used solid ground floor. Introduction to the barn floor is given usually in the opposite direction with the introduction of housing [1].

Mezzanine: In areas where the slope is huge a mezzanine gained from the slope between the barn and living floor. Those examples encountered greatly in the region. In some instances, the mezzanine is used as the living floor. As for some instances, it is kept the same with the barn and is used as the storage [1].

The main floor: it is the most important floor of the constructions. The entering is typically made from this floor, the largest burden in terms of the functions is on this floor. In the living floor, the entry points located on both sides of the housing are located over the main axle. This axle is called "the street" [1].

The living floor is separated into two parts for the day and night use. The spaces used during the day are less bright than the spaces during the night, the interior is dim. While the laying of the parts used during the day is mostly compacted soil or stone, the wood flooring is used in the parts used at night. While the toilets in traditional housing are positioned on the outside, they are taken inside on the living floors [1].

The hybrid system is the use of different construction systems in the same construction. In fact, most of the constructions are built with mixed system in the eastern Black Sea region. Even though, the base and basement walls in coastal areas are from stacking stone, the system at the upstairs is the wood stacking or wood carcass. In some instances, the wood stacking and carcass are seen to be used together on the normal floors on top of the basic wall.

5 Conclusion

What is wanted in this study is the examination of the life cycle of the materials used in the Black Sea houses, the energy that they consumed during the phase before the construction, the construction phase and post construction following the principle "construction-life cycle".

The stone, soil / adobe and wood materials take part in both construction systems and the construction materials in the traditional Eastern Black Sea houses. For this reason, the

Eastern Black Sea houses has their own unique design features, the necessary information about the subject is wanted to transfer to the house designer candidates.

To continue the traditional existence of the physical environment in the region a number of studies are made. The examples of architecture that reached the present day are protected by the works of renovation and restoration. As well as the current situation, the projects similar to traditional constructions are prepared and done in the recent period. The wood and the stone used in the traditional construction system are used mostly as a coating material in side formation. Besides, when the side rates and the construction sizes are taken into consideration, it is seen that the sustainability of the traditional architecture is only a stylistic imitation.

As time passes by, the change can't be avoided with the changing environment conditions but when the concept of sustainability with change is considered together, it is inevitable to make positive contributions to architecture. For this reason, obtaining the projection and the physical sustainability of the natural construction is important for the continuity of social and cultural commitment.

6 Acknowledgments

This study was presented as an oral presentation at the II. International Furniture Congress, 13-15 October 2016, Muğla, Turkey.

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