

Vernacular Building Heritage in the Eastern Black Sea Region in Turkey

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Abstract: The eastern Black Sea Region, in Turkey, has a significantly authentic characteristic as regards to its rural architecture. The climate, geography, and local living culture in the region have developed an invaluable rural built environment in terms of cultural heritage. Thus, the architectural heritage of the region shows the perfect balance between the nature and human life, there is a need to understand the value of the vernacular architecture heritage in the region. The architecture is a response to functional requirements as well as environmental factors. Indeed, rural architectural of this region is a reflection of the cultural values of the society, behavioural patterns of the people and environmental factors from the past. In this study, the aim is understand and appreciate this heritage through systematic surveying and documentation in eastern Black Sea Region composed from Trabzon, Rize and Artvin Cities. Further aims are the establishment of an architectural typology based on the plan, façade and site plan, and materials use, with the goal to develop guidelines for new buildings in the region.

Key words: Rural architecture, vernacular architecture, black sea region, cultural heritage.

1. Introduction

There are three cities in the eastern part of Black Sea Region: Trabzon, Rize, and Artvin. The vernacular architectural heritage of these cities has important value in terms of cultural heritage. This heritage has common characteristics because of the climate, topography and the usage of materials in the building construction. Thus, the architectural heritage of the region shows the perfect balance between the nature and human life. Nowadays, there is a need to understand the value of the vernacular architecture heritage in the region. The architecture is a response to functional requirements as well as environmental factors. Indeed, rural architectural of this region is a reflection of the cultural values of the society, behavioural patterns of the people and environmental factors from the past. The interiors of some of the big houses have significant ornamentation on their ceilings, doors and some furniture.

The climate of the eastern Black Sea region is mild and humid influenced by the sea. The mountain ranges which lie parallel to the coast also have an impact on the climate. The temperature does not reach extremes because of the effect the sea. The moisture level is over average due to the rain and due to the sea. Therefore, vegetation of the region is diverse and very dense. There are many endemic plants and special vegetation areas which are under protection.

The aim of this study is to understand and appreciate this heritage through systematic surveying and documentation in eastern Black Sea Region (Trabzon, Rize, Artvin). Further aims are the establishment of an architectural typology based on the plan, façade and site plan, and materials use, with the goal to develop guidelines for new buildings in the region.

The research method is based on data collection on site and in the literature, about each city, and an analysis of this information. The historical development of this heritage has set up a background to this research. The results are presented in the form of pictures and drawings. This helps local people to develop consciousness about the importance of the

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regional heritage in terms of their past, present and future life. It is also very important to keep alive the local architectural identity. Architectural heritage is different from elsewhere around Turkey as well as in the world.

2. The Location of the Region

The Black Sea Region locates on the north-eastern part of the Turkey. This region has three cities and many small towns around them. The cities are established on the costal side and have a limited land because of the high mountains right behind the sea line. The settlement pattern and architecture of the areas are determined by the climate and topography. The rural part of the region has very limited land that is available for the settlement and agricultural activities. The built heritage is the product of his difficult geographical conditions and the way people has been responding to these harsh topographical conditions historically. The city of Artvin has a border line to Georgia on the eastern part of the region (Fig. 1).

The region has very rich architectural heritage in terms of buildings types. The major structures are the rural houses in the region. But there are also different buildings and structures apart from houses: storage houses (*serender*), bridges, water mills and small village mosques. Especially the storage house type that is entirely made from wood, named "*serender*" has unique architectural characters in terms of structure and ornamentation architectural identity (Fig. 2).

2.1 Settlement Pattern

The major factors, affecting the rural settlement characteristic and architectural formation in the region, are natural, environmental and socio-cultural factors. On the significantly rough regional topography, it is observed that village settlements are located on the slopes, or valley plains. Nonetheless, due to the climate and more suitable settlement characteristics, the middle sections of the slopes are more preferred as the settlement areas because the crest of the valleys are

exposed to the rough winds while the valley plains are vulnerable to floods. The houses are closer to the each other in the settlements due to the profound social relations between the houses and requirement for the neighborhood relationships. The settlements also allow the formation of small streets in some villages. Small neighborhood units, consisting of a few houses and "*serender*", are encountered in some settlements. In the rural settlements of the Eastern Black Sea Region, which is the study area, many vernacular and other architectural examples do exist. The settlement models are classified, according to the clustering form of the houses and other service buildings, as compact, scattered, and row settlements in the region. The premises that are clustered in a compact form are located on the partially flat plains. The clustering forms, which determine the settlement model, generally depend on the kinship relations as well as the physical conditions; in other words, they are social structure based. Compact settlements are mostly encountered in the regions closer to the valley plain whereas row settlements exist on partially sloped areas which are farther from the river plain shown in Fig. 3. The houses are positioned facing towards the valley and they are lined up, repeatedly in the form of one house and one "*serender*", on a road [1–3].

The "*serender*"s and other structures, located near the house, define the rural settlement characteristic. stone/wood bridges that enable the transportation between the settlements, located on top of the creeks, stone/wood mills, located near the settlements, and stone/wood mosques, located inside the settlement area, are significant architectural buildings. Although they display some variations architecturally within the region, these structures do exist in every settlement (Fig. 4).

2.2 Building Materials

Wood and stone are the major and common traditional building materials. Wood has been used in the past when there were enough resources in the

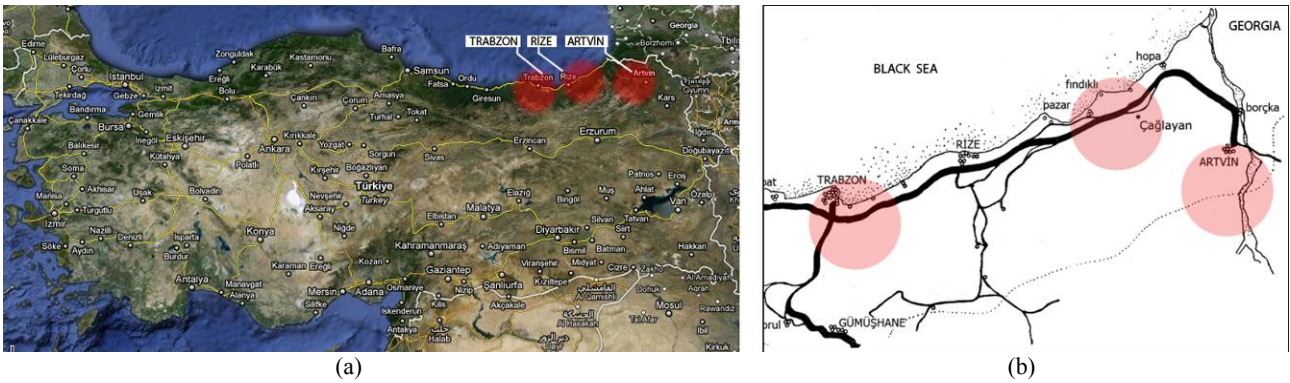


Fig. 1 Trabzon, Rize and Artvin Cities in the eastern part of Black Sea Region in Turkey (figure was modified from Necati Şen).



Fig. 2 Buildings types: (a) vernacular house; (b) storage house “Serender”; (c) water mills; (d) stone bridge; (e) the village mosque.



Fig. 3 Settlement pattern: (a) row settlement, Karacakaya Village, Trabzon ; (b) compact settlement, Çaylayan Village, Rize.

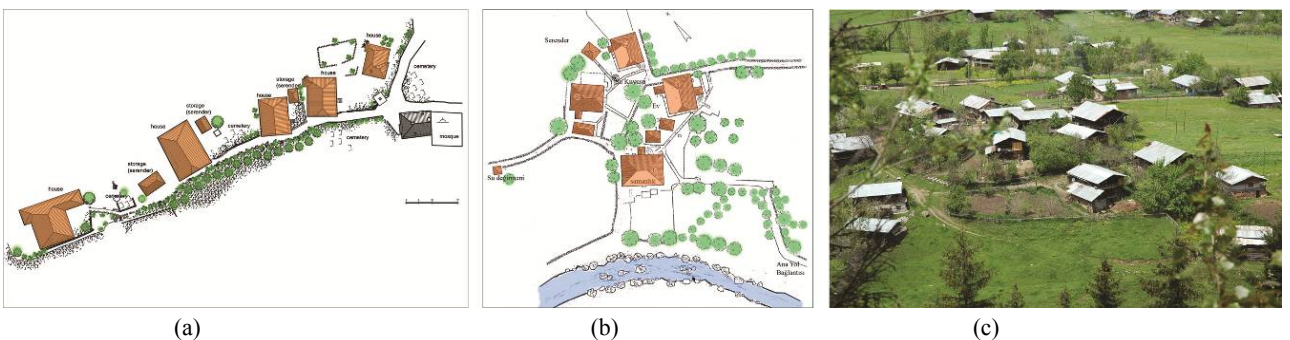


Fig. 4 Rural settlement characteristic: (a) row settlement, Karacakaya village, Trabzon; (b) compact settlement, Çaylayan village, Rize; (c) scattered settlement, Kocabey village, Artvin.

natural local forests. The stone was commonly used in the villages where forests were far away. These two

materials have been used together in different construction techniques. The local builders of the

region reached perfection by establishing a regional architectural tradition using wood and stone in a very skilful way for a long time. The identity of regional vernacular architectural is distinct and reflects perfect utilization of wood and stone material both in the interior and in the exterior of various types of buildings structures [4, 5].

2.2.1 Timber

The wood is one of the major building materials of the region because of the rain and high humidity. Therefore it has been easy to have wood material in the region. The high humidity is not good for the ordinary wood materials usually but the timber as a raw material used in the region is produced from very dense trees. The main characteristic of this type of wood is high stiffness in terms of formation. Wooden materials have high resistance to moisture and heat, and are durable. The varieties of trees have been used such as chestnut, ash tree, elm, beech and spruce. In addition, pine tree is also common. Wood is used for walls (bearing, strut, filler, partition walls and coating), floors (beam and coating), frames (doors, windows and balcony balustrades), roofs (all roof structures and covers), furniture (every kind of furniture) (Fig. 5). The wall systems of entire houses are built from wood except for the ground floor (basement) walls [1, 4, 6, 7].

2.2.2 Stone

Stone is an important building material in the region because it is obtained easily in nearby streams and stone quarries. It is a very appropriate material in terms of providing a good transition with organic materials



Fig. 5 Usage of wood—timber heap style.

(wood) and prevents a high level of ground humidity. Limestone, andasite and basalts are commonly used stone types. Stone, having an organic characteristic like wood, is the most suitable transition material for fastening the structure to the soil with a high level of humidity. Stone material is used for the construction of all the walls that contacts with the soil and is placed on the slope (Fig. 6). This condition prevents the water from reaching wood sections of the house. In these structures, stone material is used for the construction of foundation bonding beams, foundations and walls that separate the structure from the soil, sub-basement sections, chimney and fireplace walls in the heating elements, and entrances and courtyard slabs in the slabs, and as the main wall material or cell filling material in the exterior walls [3, 4].

3. Construction Techniques

In the general sense, the major factors of the construction techniques in the Eastern Black Sea region consist of different uses of wood and stone materials. Nonetheless, the applied systems also differ in relation with these uses of the timber material. It is possible to classify the basic applications of constructing techniques into two groups; namely, timber heap and timber framing (skeleton) systems. The skeleton system then can be grouped into three as “timber filled wall”, “filled cell wall” and “filled triangle cell wall” [1, 2, 4, 6].

3.1 Timber Heap Technique

They are heap systems formed, without using poles,



Fig. 6 Usage of stone as a basement wall and filling material.

by horizontally overlapping the timber building elements and applying interlocking details on the points closer to the edge. This timber construction system is a widely used system in the rural sections of Eastern Black Sea Region. This system can be formed by using approximately 2–5 cm wide timber or circular section logs. The walls also have a load-bearing characteristic. When the timber heap technique is applied, the structure is constructed on a stone masonry basement wall (Figs. 7 and 8). For some examples, on the other hand, this masonry basement wall can rise and constitute the entire ground floor [1, 4].

3.2 Timber Framing (Skeleton) Techniques

Timber framing system is named as “timber skeleton” or “timber carcass” in different local areas of the region. In this system, poles, with sections of approximately 5×10 cm, are placed over the floor beams with 15–20 cm intervals; and thus the facade carcass is formed. The floor beams are also connected to each other with interlocking joints. The cells, created by the carcass system, are then filled with different materials (stone, brick, or adobe). The structure, like in timber heap technique, is also placed on a stone masonry basement wall in this system; and the entire ground floor can sometimes be built by using stones. The timber framing, according to the filling material used and form of the carcass system, can be grouped into three as mentioned below [1, 3, 4].

3.2.1 Filled Cell

In this system, the whole facade is bonded so that it would create rectangular cells; with the method of horizontally separating the facade by using thin



Fig. 7 A house built on a stone masonry ground floor and upper floor is constructed by timber heap technique.



Fig. 8 The corner joints details in timber heap system.

wooden elements between the timber framing system’s poles placed with 15–20 cm intervals. These rectangular cells formed fill the surface, dimensioned so that it would fit these cells in the facade, with significantly uniform boulders. Although, there are dimensional variations, these openings can be considered as being standard. The small sized voids, left between the boulders used for filling and perimeter of the cell it is placed in, are filled with lime mortar; and the facade is finalized (Figs. 9 and 10). Different colored boulders and white lime mortar, inside the timber system which darkens overtime, create an aesthetical view of the house external surface inside the green environment [1, 4, 6].

3.2.2 Filled Triangle Cell

The system is the same as the filled cell technique. Nonetheless, the use of metal fastening elements instead of interlocking details does strengthen the assumption that this technique emerged in later periods. The intervals between the poles in the filled triangle cell system, however, are a little bit wider (20–25 cm.). The openings between these poles are then bonded so that small sized wooden elements, used fully horizontally in the filled cell system, is sloped 45°; and triangular cells are formed between the poles. Therefore, the openings, which are square or rectangle shaped in filled cell system, are triangle shaped in this system. Since the little triangles resemble “muska (triangular amulets)”, they are named as “muska filled” colloquially (Figs. 11 and 12). The triangular openings in this system are filled by placing several stones, instead of a single stone, by using lime mortar [1, 4].



Fig. 9 A house constructed with filled cell technique.



Fig. 10 Detail of a filled cell.



Fig. 11 A house constructed with the technique of filled triangle cell.



Fig. 12 Detail of filled triangle cell technique.

4. Characteristics of Vernacular Houses

Vernacular house of the Black Sea Region is the result of very rich cultural heritage from the diverse ethnical structure historically. The plan and architecture form of the houses are reflection of regional history, cultures, usage of the material and the most important that is adaptation of the local climate/topography and the skills of the local builders. Each detail of the house has some explanation and the need of something else in human life. Therefore, these houses are unique in term of construction techniques as well as plan and facade characteristics. Especially use of timber and stone together in very creative way, make these architectural heritage and houses very valuable today. Both plan organization and facade aesthetic is very good combination need of life style as well as the topography [3].

4.1 Plan

The main determinant factor of the plan setup in the region is its harsh topographical structure. As a result of the sloped and formidable land conditions, the houses in the region were always built as having two storeys. In the considerably sloped land, the ground floor was formed somewhat encased, such that it can be placed on the sloped land, as the barn built with masonry walls while the second floor contain the living spaces built with one of the abovementioned systems [3, 8].

The rural houses generally contain two entrances from two opposite facades. These houses contain plan types that include details which can meet all the requirements of daily life. As an example, each room of the house contains furnaces that can meet the heating and sometimes cooking requirements. The living space of the house, or nowadays called the multi-purposed lounge, is the “kitchen”. This space is also called as “hayat (life)” in the region. The activities realized in the kitchen can be listed as; preparing supper/dinner, eating, cooking when required, dishwashing, laundry, bathing the children, churning, entertaining the

neighbors, festivities such as henna night and wedding, and memorial ceremony.

The ground floors of these houses, located on the slope, are used as the barn space. There are vernacular rural houses which do not contain the barn space. Their entrances can be from the lower side of land slope or from the sides.

Each room in the rural houses was built for meeting the requirements of cooking, sleeping, and living. Moreover, in some rural houses, storage spaces are also contained inside the house. This space is called “ambar” (storehouse) in the region. The most significant factor that determines the plan dimensions and varieties of the rural houses is the economical level of the inhabitants. The number of rooms increase and the spaces gain variety as the economical level increases. An additional guest room, for hosting the guests, exists in some houses (Fig. 13).

4.2 Facade

The use of material and construction technique determines the facade characteristics of the houses in

the Eastern Black Sea Region. The facades of filled vernacular houses, built based on timber framing system and encountered in three provinces of the region, have authentic features in relation with the construction technique and use of building material. The facades of the filled houses, placed on a stone basement floor and built by using filled cell or filled triangle cell wall system, rise together with the living floor and ends with a pantile covered hipped roof. One of the noteworthy elements belonging to the facade is the 10–150 cm wide eaves. The purpose of this wide eave is to protect the main building material, timber, from the heavy rainfalls of the region.

In both of the filled cell and filled triangle cell wall systems, a rhythmical facade order, created by the repetition of both rectangle and triangle elements, is established. The timber elements gradually darken in time and create a distinctive contrast with the colors of stones placed inside the cells. The facades are plastered with the lath-and-plaster technique, covering the surface by using thin laths, from the inside whereas

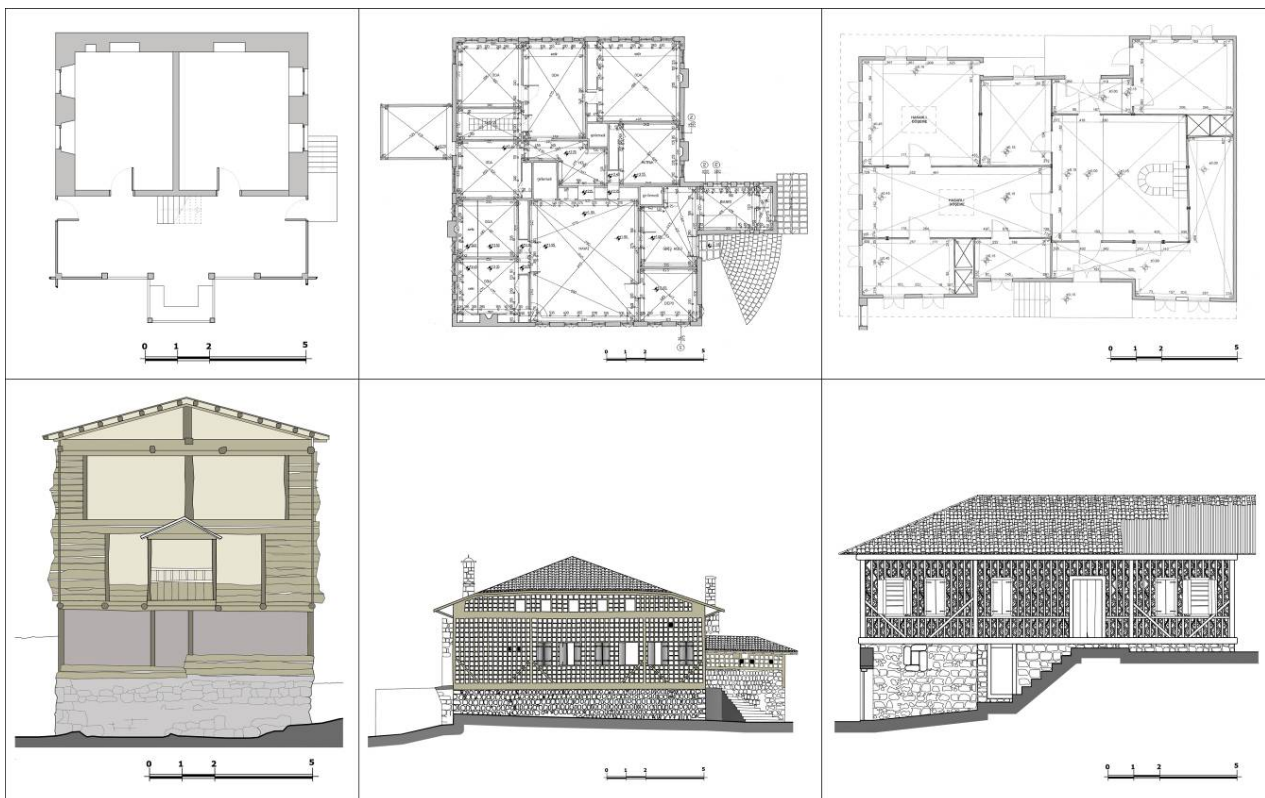


Fig. 13 The plans and façade examples of the vernacular houses from Artvin, Rize, and Trabzon.

they are left as it is from the outside. This rhythmical facade order, as good as exhibited by being left open, indeed provides the major characteristic of the regional architecture. When evaluated in detail, the cells or triangular structure, constituting the facade, are used as a kind of “measurement unit” that references the whole of structure. The general dimensions of the facade are obtained with the certain number of horizontal and vertical repetitions; window and door openings are established by voiding in the required sections; and designing is implemented as if using an axial system. Two different construction techniques are used in the Timber Heap Systems. The first type is a system established by overlapping and interlocking of the wooden elements. This system is generally used in the living floor and the village houses. Although the interlocking details of corners do display differences within the region, the major approach is similar. In some examples, especially in the “serenders” that are used for storage and timber mosques, timber facade ornamentations stand out. The second system, on the other hand, is the log stacking technique that is especially used in the barn floors in the rural regions of Artvin. This technique, at the same time, is used in the mountain houses built at the high altitudes (Fig. 13). The facades of the timber heap houses with stacked log barn and regular living floors do appear as notably aesthetic [8, 9].

5. Conclusions

The rural architectural heritage is a product of transferring the lifestyles and environmental factors, by the geography and local people, on their construction techniques. Therefore, it is one of the significant cultural assets that reflect the local identity and traditional life style. It is extremely important to preserve and transfer this construction custom, which is formed by the interaction of different societies that live in the region with each other and environment, to the next generations.

As of today, the vernacular architectural pattern of Trabzon, Rize, and Artvin, which are the Eastern Black Sea Region cities of authentic geography and cultural heritage, has been under the pressure of rapidly spreading global construction techniques. In fact, these houses that gradually decrease in number and other structures specific to the region are significantly authentic and have enriching heritage in terms of revealing the local architectural identity.

Today, the lack of systematic documentation of this heritage and abandonment of the buildings due to migration from the villages to cities results in rapid destruction, demolishing and decay. Therefore, preservation of this tangible heritage is an important issue in the region in terms of their heritage value for all humankind. Because of the characteristics of architecture and the settlements which reflect the use of regional materials and technology in combination with the experience of local builders.

With this study, the settlement characteristics, building materials, authentic building systems, and architectural formation of the rural settlements in the Eastern Black Sea Region was attempted to be revealed. This vernacular architecture heritage, authentic to the Eastern Black Sea Region, is built on rational solutions that correspond to building materials, formation process of the construction systems, and life style in the region; as regards to both spatial setting and architectural formation. It is observed that a significantly authentic construction language was developed by using local materials, together with local knowledge and labor, which could bring solutions to local environmental problems (climate, topography) in the region.

As a conclusion, a general typology of the Eastern Black Sea Region’s rural architecture was created by evaluating the region within the provinces of Trabzon, Rize, and Artvin. The data created is significant for revealing the rural architectural values in the region and for offering an insight into new constructional activities.

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