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Review

The impact of physical and socio-cultural factors on structuring vernacular dwellings in Eastern Black Sea Region

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People live in their physical and social environments and they ought to arrange their relations via physical and social environments surrounding them to meet sheltering need, which is their essential requirement. When, especially, traditional residential architecture that represents historical and cultural backgrounds of societies is examined, the critical importance of human-environment relation is observed. When Anatolian traditional residential architecture is examined, it is observed that, as in many societies, dwellings are the reflections of the physical and social structures of the region where they are located. Dwellings that are structured differently in various parts of Anatolia signify both physical conditions and social characteristic and rich cultural background of the region they are located. In this sense, vernacular dwellings in Eastern Black Sea Region have a key position in the Anatolian residential architecture. Within the scope of this study, the impact of physical and social factors on residential architecture was analyzed by focusing on the vernacular dwellings in Eastern Black Sea Region (in Turkey). In this study, structuring process of the vernacular dwellings in Eastern Black Sea Region was examined from the housing scale to the location scale in terms of physical and social factors.

Key words: Eastern black sea region, vernacular dwelling, natural and physical factors, socio-cultural factors.

INTRODUCTION

People have always been in interaction with their physical environment and social environment as from the time when they started to meet their essential living requirements and they have developed many ideational approach and practices to arrange their relations with their physical and social environment they live in.

People have tried, especially, to improve the conditions of their physical and social environment to meet sheltering need that is their essential requirement. When dwelling and its surrounding are evaluated in an historical process, it is observed that they are the reflections of the physical and socio-cultural structures they belong to. It is only possible to mention about habitable and sustainable environments for dwellings structured by taking the environmental conditions into account.

Historically, dwelling is the organized pattern of communication, interaction, place and sense. While it reflects characteristics, way of life, codes of conduct, environmental preferences, images and time-place taxonomies of the ethnic group it belongs to, it also reflects images of its owner regarding its essence, its tendency for proving and explaining itself. Thus, it reflects a person's character and distinction via its design, decoration and its style (Gür, 2000).

According to their cultural experiences, people reflect fictional methods in their mind to their built environment. Therefore, there are as much dwelling forms as the recognized culture in the world. These dwelling typologies in the world tell us different lifestyles and philosophies of societies.

What make a society flourish are cultural values and

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traditions. These values make up the history of society on the one hand and provide a cultural continuity to transfer it to future generations on the other. The traditional residential architecture, which is one of the fundamental discourses of culture, is also a prime indicator of cultural relations within is locality. Thus, the sustainability of traditional residential architecture is closely connected with cultural continuity. Traditional houses and their surroundings will help future generations maintain their cultures by acting as a tool for transferring norms, traditions and values (Günce et al., 2008).

However, the formation of dwellings is not only related with cultural factors. Factors that have impact on structuring a dwelling must be divided into three different categories as natural factors, cultural factors and social factors. Apart from socio-cultural factors, geomorphologic characteristics of the place where dwelling is located have also impact on dwelling structuring as natural factors. When, especially, formation of the traditional dwellings that are the source of historical and cultural background is examined, it can be seen that the relation of human- physical and social environments- housing has an effective role in dwelling structuring.

PHYSICAL AND SOCIO-CULTURAL FACTORS IMPACTING DWELLING STRUCTURING

Studies on human-environment interaction have a history dated back approximately half century before. Although many things were written on human-environment relation within this period, there is now a consensus on the impact of environment and place on person, and human behavior on the environment. According to this human-environment model that interprets those interactions as dynamic and adaptive processes, human behavior and human nature affect the organization of the environment. In return, this environment affects the human behavior and each of them is changed and is shaped with the impact of another (Altman, 1975). Accordingly, dwelling shall not be considered as “a place to live” but it shall be considered like a texture that a person has to be kneaded together (Gür, 2000).

It is the traditional dwellings that are formed according to the cultures, which are mostly considered while examining the interaction methods of human-environment-dwelling. Traditional dwellings that are a part of historical and cultural backgrounds in many societies have characteristics that can be a source of human-environment interaction for modern dwelling designs.

It is observed that there exist three major determinants in structuring; from the housing scale to the location scale, especially when traditional housing is examined. There can be evaluated as natural indicators, cultural indicators and social indicators. Rapoport argues that there is a transformative relation between natural and socio-cultural factors and traditional dwelling structuring (Rapoport, 1969).

Because both communities and nature that is formed by human take part in natural systems that existed before them and they are affected from those components. Natural resource that geography offers and material opportunities are the natural determinants affecting dwelling structuring. On the other hand, meanings and norms of functional organization of dwelling are accepted as the cultural determinants. Social factors such as structure culture, level of welfare of the community and the family, and so on are the reasons for diversification of dwellings in communities who share same cosmic value within the same geographical conditions. This determinatives group can be evaluated as social determinants (Sümerkan et al., 1993).

From this point of view, it can be said that traditional residential architecture is the reflection of natural and socio-cultural characteristics of the region they are located. Natural factors such as topography, climate, location, brightness, landscape, light, vegetation cover, and so on, are crucial in formal and in spatial formation of traditional dwellings. Therefore, traditional dwellings structured in areas with sheer sloped topography, and in plain and extensive areas, have varying characteristics from housing scale to location scale.

Apart from that, socio-cultural factors such as way of life, family structure, neighborhood, belief and so on, have an effective role in the organization of dwellings, particularly in their spatial organization.

Factors that are the geo-cultural method of expression, as mentioned above, and that are determinant in organizing dwellings are indicated in Table 1 under two categories.

VERNACULAR DWELLINGS IN EASTERN BLACK SEA REGION IN TURKEY

In Turkey, dwellings and its immediate surroundings are shaped with living habits taken from Central Asia by adding them a dimension in a historically and culturally wealth geography like Anatolia. Almost in all parts of Anatolia, a wealth residential architecture that varies in terms of socio-economic life, geography and building material but which is a combination of nature and history has developed. Those mentioned dwellings are called as vernacular residential architecture that is formed as the geo-cultural reflections of the region they are located.

Vernacular dwellings that vary in different places of Anatolia in terms of settlement and location organizations, are not only created considering physical environmental conditions of the region they are located, they are also indicators of the rich cultural background and the lifestyle of settlers. In this respect, vernacular dwellings in Eastern Black Sea Region that are mentioned in this study also introduce a rich mosaic as

Table 1. Factors that are determinant in the design of a residence*.

Natural and physical environmental factors	Climate
	Topography
	Environmental texture
	Local materials
	Building techniques
Socio-cultural factors	Lifestyle
	Family structure
	Economic structure
	Neighborhood
	Beliefs
	Traditions and cultural values

*Developed based on Rapoport.

the source of region's natural habitat and cultural background.

Eastern Black Sea Region is a region where human settlement has been observed since antiquity. This past was documented up to 2000 BC (Goloğlu, 1973; Sümerkan, 1990).

Eastern Black Sea Region is located in Black Sea Region; north of Turkey, and it is one of the three sub-categories of the Black Sea Region that are divided as western, middle and eastern. As can be seen in Figure 1, this region is located along the northeastern shore of Turkey. In the eastern part of this region, Georgia is located. The region is bordered with Georgia-Ordu provincial border in the west, with Kalkanlı Soğanlı and Kaçkar mountains in the south and with Black Sea in the north.

When residential architecture of the Eastern Black Sea Region is examined, it is observed that physical factors such as topography, climate and local material, and socio-cultural factors such as lifestyle, economy, cultural values and neighborhood have a significant role in formation from the housing scale to the location scale.

The Impact of Natural and Physical Environmental Factors in Eastern Black Sea Region

Natural and physical determinants are evaluated below under separate titles.

Topography

Eastern Black Sea Region has lugged terrains where there are dip ridges and slopes between high mountains and sea. Region appears like a curving lane since it is surrounded, from the south, with mountain range running parallel to the sea.

Mountains that run parallel to Black Sea, ravines formed by the mountains, watercourses that pass among canyons and that flow into the sea are the most significant components of the morphologic structure. Canyons in the region block the access to dip green slope when moved in from the shore. Therefore, bridges that connect one side of the watercourse to another appear as significant transportation systems. Bridges on the watercourses that have various forms contribute to the architectural characteristic of the region in terms of form, material and construction method. Two types of bridges, which enable access to each watercourse banks, draw attention in the region. The first one is made from wooden material and those are drowned-fringed bridges and the other one is made from stone (Figure 2). Although these bridges were constructed upon construction practice, they are aesthetic architectural objects that resist to compelling nature conditions and that integrated with nature.

Furthermore, mountains that run parallel to Black Sea reach to different altitudes towards inner sides; this situation makes changes in the physical factors of these areas. Accordingly, this situation also affects the density of housing (Tosun, 1983). In topography, in areas with higher altitudes where climate has maximum impacts, the settlement becomes rare. However, slope ridges, channels and straits where wind is felt heavily, places that landslide and avalanche threats exist, wetlands where flooding may occur, places that are left in the dark constantly, lands in the coastal sides that are within the ebb tide zone are the areas that are avoided for locating dwellings (Sümerkan, 1990).

In the coastal part of the region where dwellings are seen densely, settlement is significantly dispersed. Because each family constructs its dwelling into its own farm, the dispersions of dwellings in the land are related to the dispersions of farms. It can be said that in some cases distance between two dwellings reaches to 10000-

Figure 1. Location of Eastern Black Sea Region in Turkey.

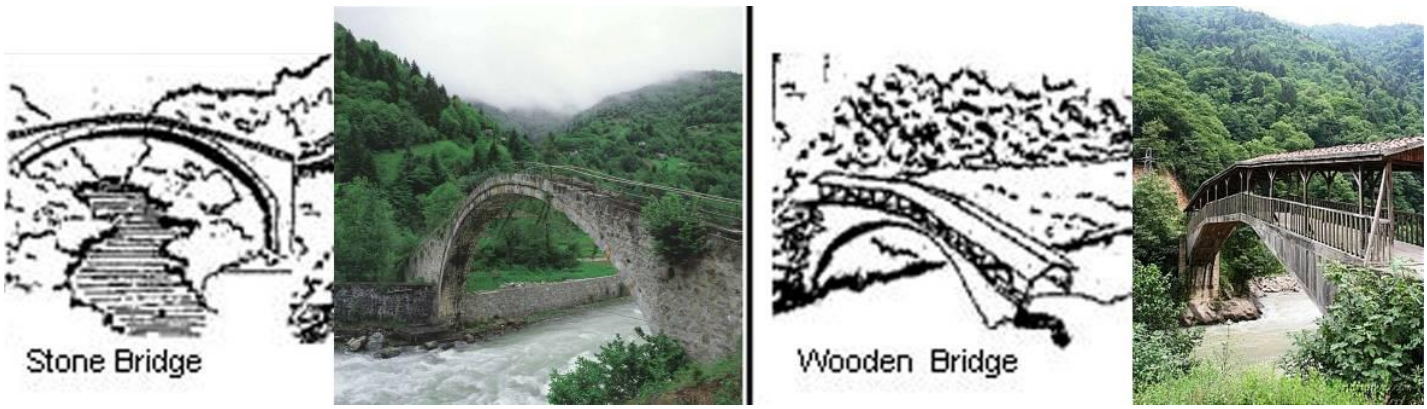

Figure 2. The Bridges as the Transportation Elements in Eastern Black Sea Region (Batur, 2005).

15000 m. Related to the rouged land and difficulty in transportation, cultivation of the farm, fertilization and product storage are made by human efforts. Being close to the land partially facilitates life. Moreover, many animal species that are dangerous for crops harbor in these rich vegetation cover. A person who is away from its land may loose all of its yearlong efforts. Therefore, as can be seen in the Figure 3, dispersed housing is an inevitable obligation. Dwellings in these settlement plans are connected with each other with pathways. Walking in these pathways is difficult because of the dipped road.

In the region, dwellings that all located on the dip terrain, have to comply with topography in terms of location. Besides, areas with proper slope and a productive soil are valued in terms of source of income. Therefore, dwellings are located in the parts with slopes, and flat and broad areas are allocated to agriculture.

Environmental texture

In Eastern Black Sea region, within the area where

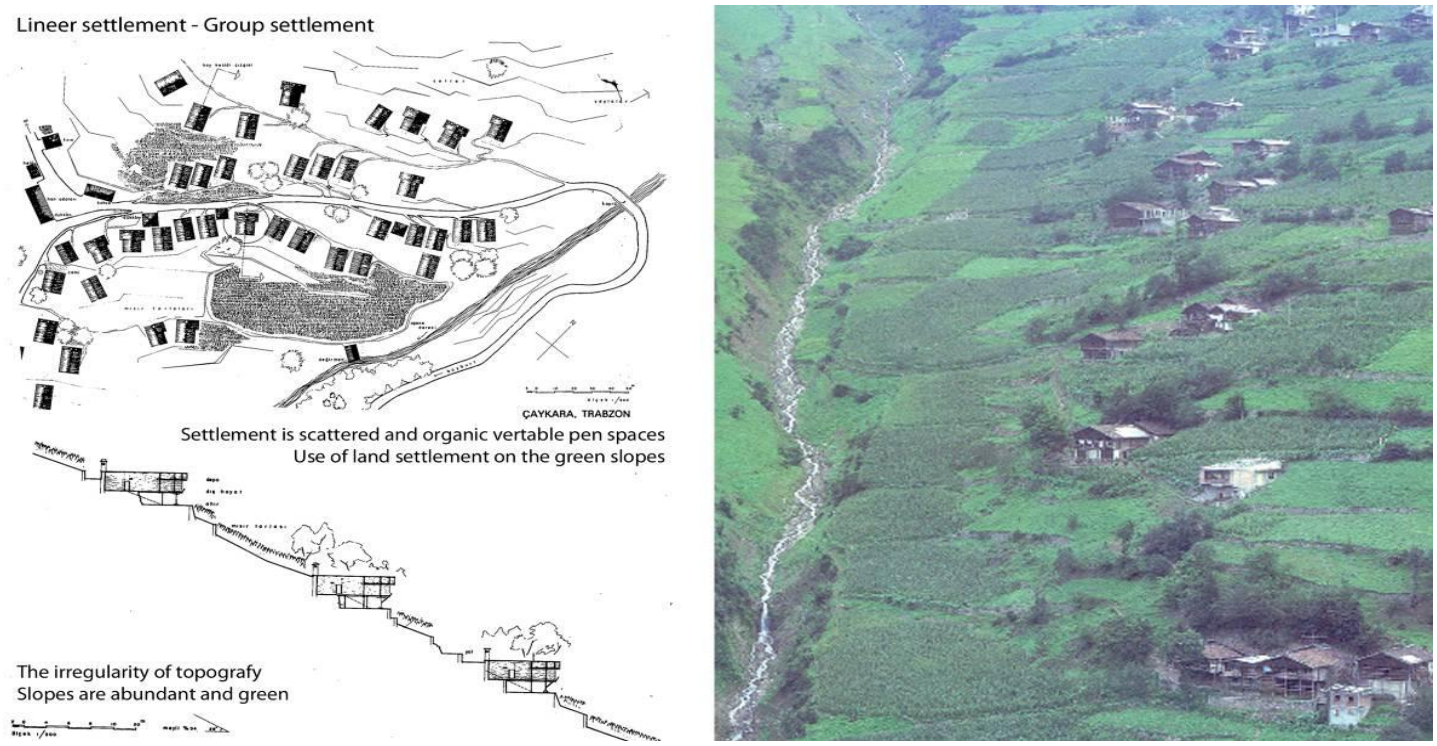

Figure 3. Dispersed settlement and access difficulty in Eastern Black Sea Region (Ozgüner, 1970; Batur, 2005).

Figure 4. Wooden vernacular dwelling examples , photo. G. Usta.

settlement is densest until approximately 500-800 m. altitude from the coast, cobnut and tea is cultivated and gardening is made. There are forests in areas where mountains are getting close to the sea. Within this altitude, mainly deciduous fagus, alnus, maple, hornbeam, oak, tilia, chestnut, from place to place, picea are seen. Until the altitude from 800 to 2000, there are forests of picea, pine, abies, fagus, hornbeam, chestnut, oak and son on (Ozgüner, 1970).

Botanical production areas are small and dispersed since dip slopes are long and in many places dips are excessive. In short distances like 40 to 50 km air distance, altitude exceeds 3000 meters; therefore, clothes with water vapor rise fast through the mountains. Thus, mountain mass is constantly humid and rainy.

Alpine zone vegetation cover is rich and lush in terms of species above 2000-2200 m. related to humid and rainy environment (Tuncel et al., 2004). Therefore, locals generally use these areas, which are not suitable for vegetative production, for animal breeding and transhumance purposes.

In the region, dwelling with wooden skeleton and solid wood dwelling are the indicators of the existence of rich forests and human disposition to woodworking. Locals had a tendency towards wooden materials and preferred it frequently for structuring dwellings and for interior decoration. In Figure 4, there are examples of the frequent use of wooden material in the Eastern Black Sea

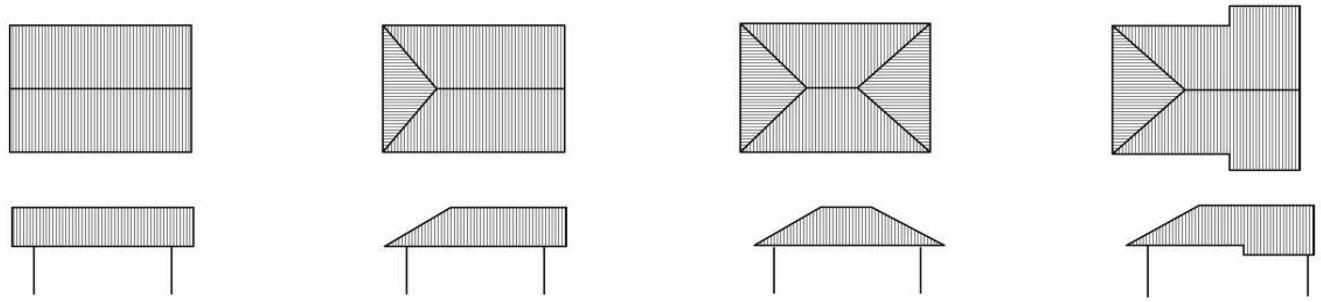

Figure 5. Roof styles in Eastern Black Sea dwellings.

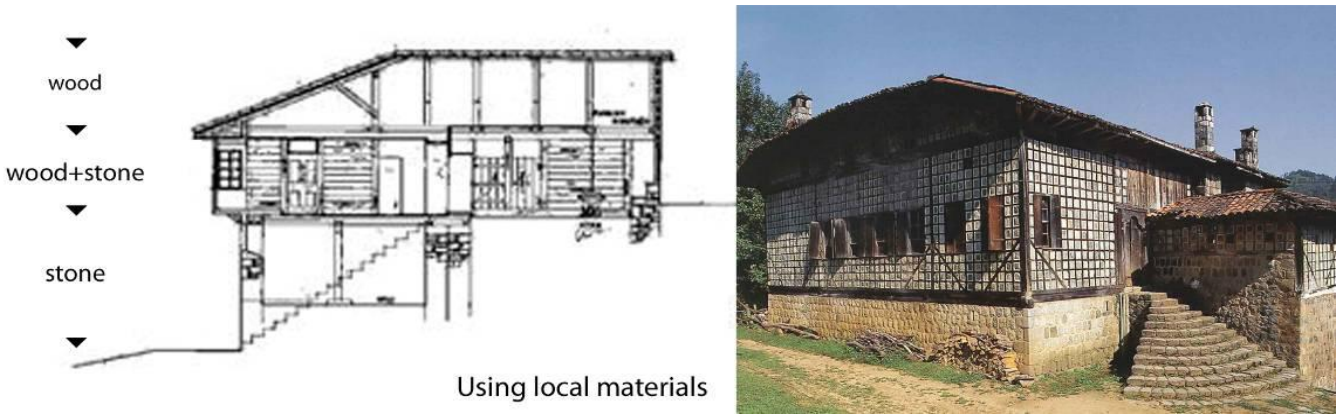

Figure 6. Material utilization in dwellings (Batur, 2005).

dwellings.

Climate

The climate of Eastern Black Sea Region is mild and humid. Rainfalls caused by low-pressure areas coming from west and north-west directions and air movements disperse to all seasons. On the other hand, humidity is the common result of dense vegetation cover and high raining rate. Mean daily temperature is 14.4 C. Prevailing wind direction is south and powerful wind direction is west and north-west (Sümerkan, 1990).

Climatic conditions in the region are effective in forming vernacular dwelling settlement. Excessive precipitation in the region causes erosions. Therefore, flat and curled stone bars were made to prevent the erosion of the productive soil. Those bars were also used nearby dwellings and it was tried to form backyards and entrances. So that, terracing arrangement draws attention in the Eastern Black Sea settlement.

Roof forms of Eastern Black Sea dwellings also vary by force of rainy climate. Due to the heavy rain in the region, generally the roofs have to be made curved. Generally, rainwater is let to sides and towards dip; so that, water is taken away from the roof. In the Figure 5, roof forms of vernacular dwellings in Eastern Black Sea are demonstrated. Furthermore, dwelling lofts are raised and designed for food drying and storage purposes.

Local materials and building techniques

Close relation with forest in Eastern Black Sea makes wood a local material. The common characteristics of wood types that are used in Eastern Black Sea Region are to be hard, to be resistant to humidity and to adopt heat changes, and not to be damaged for a long time. Therefore, it is the chestnut that is mostly preferred. This tree is resistant to rain, humidity, it is nonflammable and it is too hard; therefore, it does not give way timber wolf (Ozgüner, 1970). It gains a beautiful appearance within time by turning red. Wood is also used as roof cover in many houses.

Due to decreasing number of forests and climate conditions, stone material is also used in dwellings apart from wood. In general, stone material is used in the ground floor since it is a humid region. As can be seen in Figure 6, stone is used in the ground floor, wood and stone is used together in the main floor and only wood is

Figure 7a.Structure systems and texture of facade in Eastern Black sea dwellings (Batur, 2005).

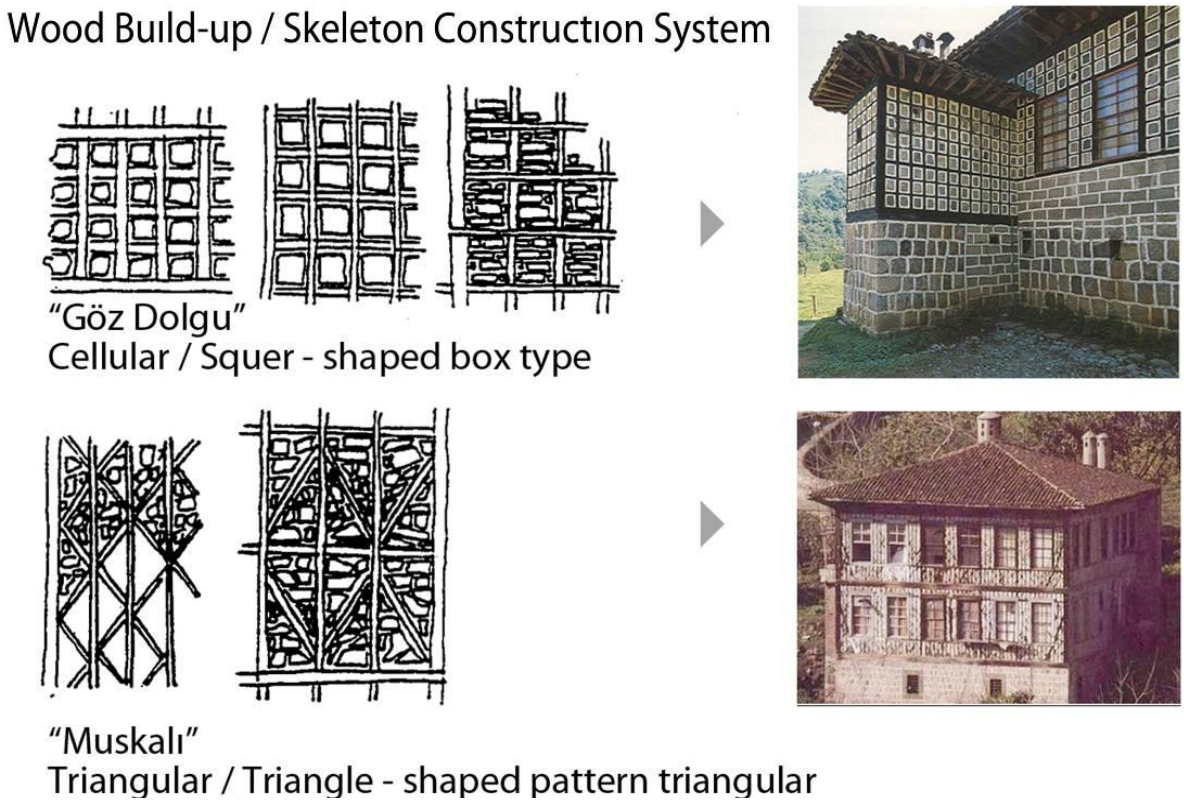

Figure 7b. Structure systems and texture of facade in Eastern Black sea dwellings (Batur, 2005).

used in the roof.

Wooden and stone material combinations draw attention while examining Eastern Black Sea dwellings in terms of bearing structure. Structures of houses are formed with two type of system. Those are as follow:

1. Wood storing system
2. Wood build-up/skeleton construction system

The first system is the bearing system that is constructed by putting wooden construction material horizontally without bays. Wooden logs, which have size that vary from 30 cm. to 60 cm. according to size of the first house, are formed with storing construction system (Figure 7a-7b). In the region, this kind of structures is seen in internal areas and plateaus where wood is diffused.

Table 2. The impact of physical factors on residential architecture in Eastern Black Sea Region

Natural and physical factors	Impact on architectural structuring
Topography	
• Cordon between high mountains and sea • Dip and rugged terrain • Ravines formed by mountains • Valleys between canyons flowing into the sea	• Dispersed and parallel to slope in the coastal side of settlement, rare in highest areas • Bridges as transportation networks • Pathways connecting dwellings • Constructing dwelling on slopped area • Usage of flat and productive areas as farm and garden • Usage of ground floor gained from the slope • Room locations towards slope, landscape and gardens
Vegetation cover	
• The form of mountainous and forestry land • Tea, cobnut and gardening on shore. Alpine vegetation-cover in high lands	• Usage of wood in dwellings' bearing structure • Usage of wood in home • decorations
Climate	
• Temperate- humid climate • Rainy in all seasons •	• Usage of stone material in ground floor related to humid terrain • Curved roof forms • Terracing around dwellings to prevent erosion
Regional material and building construction methods	
• Local material as wood due to forests • Wood and stone • Traditional construction system	• Usage of wood (chestnut and so on) in structure and interior of dwellings • Usage of wood in roof • Wood storing system and skeleton system

The second system is the wood build-up/skeleton system. This system that wood and stone materials are used together is called in different places of the region as build-up, wooden skeleton and frame (Sözen and Eruzun, 1996) contrary to storing system, in this kind of structure system, wooden bearing elements that transmit all load of the structure to the base wall are used vertically. In this system, spaces of the wooden bearing element are divided into more small pieces, a wall pattern is formed by small spaces and the small spaces, that are located between wooden skeletons, are filled with small stone pieces.

The different types draw attention in this system depending on the formed wall pattern. These techniques are called as cellular/square-shaped box type and triangular/triangle-shaped pattern triangular. In cellular technique square and rectangular spaces are filled with stone while little triangular spaces are filled in triangular technique (Figure 7a-b). The walls of dwellings that are constructed with these methods constitute a significant place in region's architectural characteristic.

As a conclusion, the impact of natural and physical factors on residential architecture in Eastern Black Sea Region is indicated in Table 2.

The Impact of Socio-Cultural Factors in Black Sea Region

Besides natural and natural environmental factors, regional communities' living conditions, economic conditions, family structure, social relations, religion and privacy customs have also an effect on structuring dwellings in a region (Rapoport, 1969). This situation is also valid for dwellings in Eastern Black Sea Region. All characteristics mentioned here are examined under the title of socio-cultural structure by focusing on Eastern Black Sea Region dwellings.

Socio-cultural structure

Local community is occupied with agriculture and animal

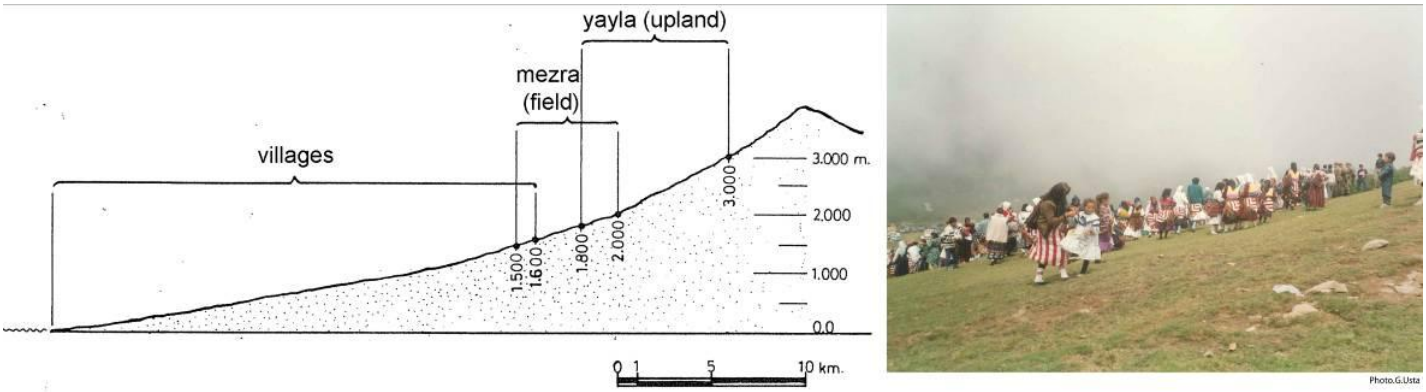

Figure 8. Settlement in Eastern Black Sea region and cerenomy in upland (Sümerkan, 1990).

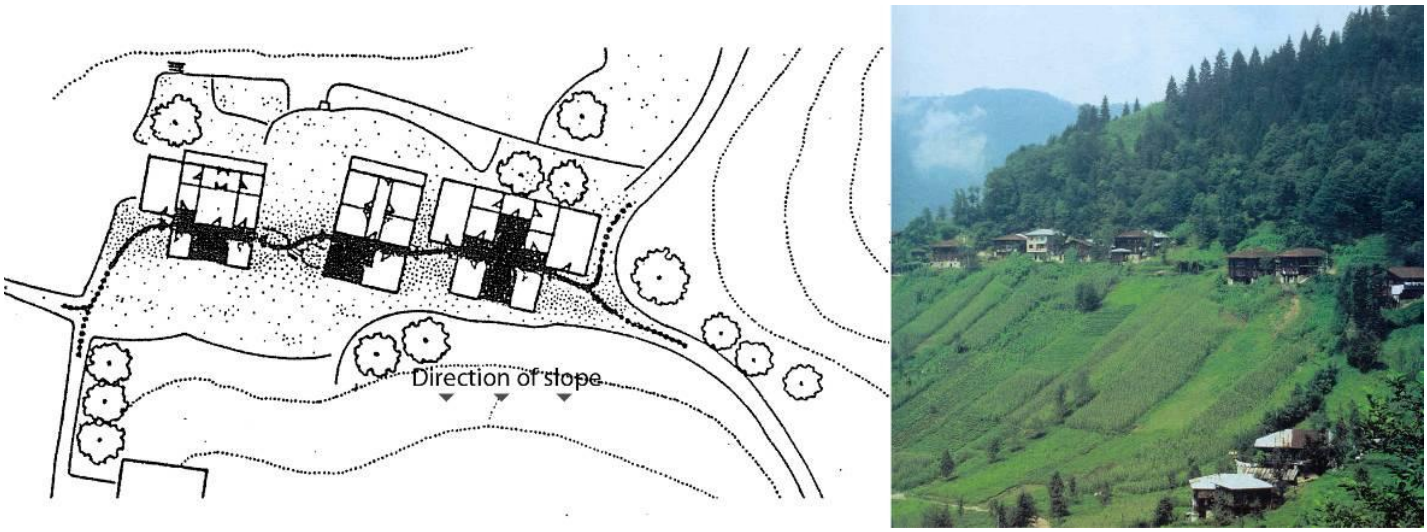

Figure 9. Neighbourhood and continuity in entrances.

breeding. The lifestyle in the region and its relation to production is reflected to the settlement way of dwellings and even to the room separation.

Front side of dwellings that are located on the highest point of dip topography is arranged as farm and garden. The reason of it is to control facility of the farm and garden that are the source of living of householder. Moreover, it is also important with regard to reap, to dry, to store and to process products that are cultivated in the region such as tea, cobnut, tobacco and corn. Therefore, places are formed around dwellings to lay, dry and store the cultivated product. For local community, outside of the dwelling is as important as the interior part.

In the region during summer time, population diminishes in waterside and valleys; on the other hand, it augments in the mountains and higher locations. Local community habituated to move high plateaus during summer time. Plateaus that became temporary settlements have a settlement and dwelling structure similar to the style in the region and they serve not only for villagers but also for town-dwellers. Besides transhumance, another temporary settlement is the hamlets. Hamlet is a stopover that is located between village and plateau (Figure 8). Activities regarding the production and lifestyle of local community create an indigenous ceremonial identity. To illustrate, migration instance to the plateau became a festival that is celebrated altogether. Community wears its local clothes, beautify their animals and they have fun altogether with local plays.

Harsh natural and environmental conditions of the region make important some features like neighboring and cooperation. Therefore, despite slopped topography, importance was given to sustainability between dwellings and neighboring in both settlement scale and location scale. As can be seen in Figure 9, dwellings are located

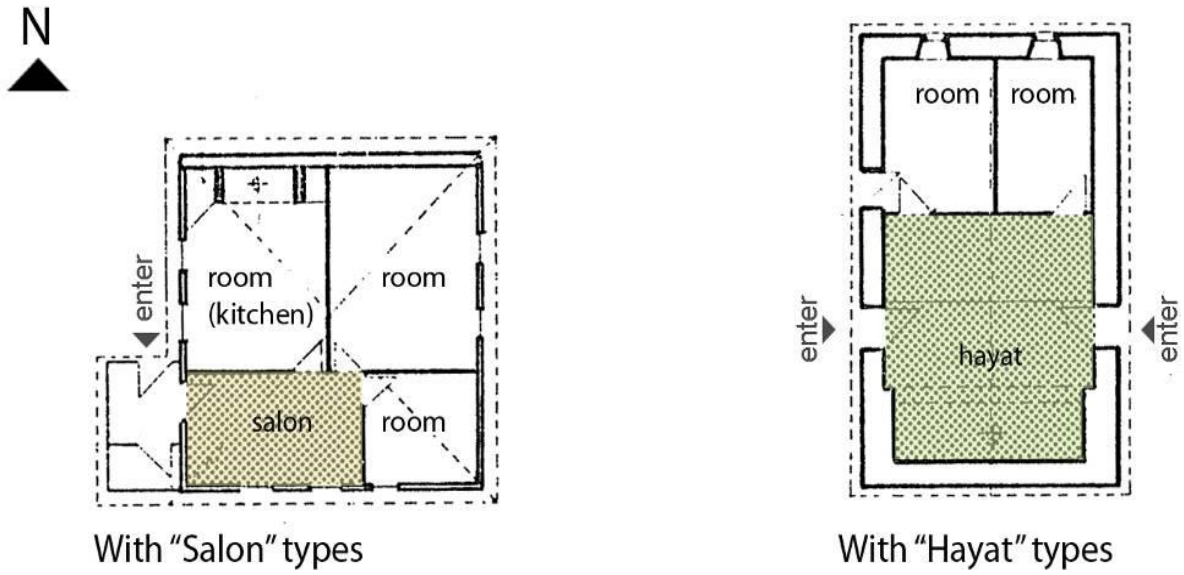

Figure 10. Eastern Black Sea dwelling plan types.

parallel to slopes and their entrances were arranged as following each other. Doors of the dwellings that are open to different directions access were facilitated to near lands, green and neighboring dwelling, and this situation supports neighborhood.

If these dwellings in this region where mountains cross with sea and green are examined in terms of inner spaces, it can be seen that there is a type of plan typology different from the other regions of Turkey. There are areas that are called as 'hayat' (living) and 'salon' (saloon), which are differentiated from dwelling plans in terms of sizes and functions. The existence of one of these plans indicates the plan type.

Ozgüner mentions about two types of plan types (Ozgüner, 1970) (Figure 10).

1. The type of plan with a "salon" (saloon)
2. The type of plan with a "hayat" (living)

In "salon" type dwellings, entrance is called as a saloon. All places in the dwelling have similar sizes. Timber floor saloon area is used as entrance and shared areas. The room that is reached after passing the saloon and where an over (fireplace) exists is used as kitchen and other rooms are used as bedrooms. This type of plan is generally widespread in provinces located in western part of the region.

In "hayat" (living) type dwellings, the area that is called as "hayat" (living) is a dirt surfaced place that is used for cooking, eating and for hosting. These type of dwellings is also called as "aşhane" (soup kitchen) since they are use to cook. From this area, it is passed to the bedrooms. This type of plan is generally widespread in provinces located in eastern part of the region.

The common characteristic of these two types of plan is being multi-functional places that meet functions of the dwelling like living, cooking, eating and hosting.

The most important place in dwellings of Eastern Black Sea Region is the area with furnace (fireplace). The floor of this place is from stone or soil. People spent time in this place during the day. In this part of dwelling that reclined to soil, furnace that is located on the stonewall surface is used both for heating and for cooking (Figure 11). Moreover, furnace is the key element that gathers family. In some dwellings, furnaces overhanging from body and internal usage furnaces are used. Ovens that are located in the same place with furnaces are for comprehensive cooking function.

In the organization of Eastern Black Sea vernacular dwellings, there are also significant graduations between floors. Each floor of the house is devoted for a specific purpose (Figure 12). Entrance of the house is the soup kitchen-hayat (living) and the living place where bedrooms are located. Downstairs resulting from the slopping ground is the barn that is used for animal housing. The section under the living floor is used as barn since local community is also occupied with animal breeding besides agriculture. Generally, there are escalators connecting the barn and living space.

The location of the barn facilitates heating the living space and protects from humidity. The roof that is on the upstairs of living space is used to store and to dry products (corn, tobacco, various goods, grass, fodder and so on). Drying the product in the roof is an important necessity in the region related to production habituation. Therefore, roof spaces are designed as air-conditioned places.

Eastern Black Sea dwellings are the result of regional

Figure 11. Fireplace and oven in Eastern Black Sea vernacular dwellings (Batur, 2005).

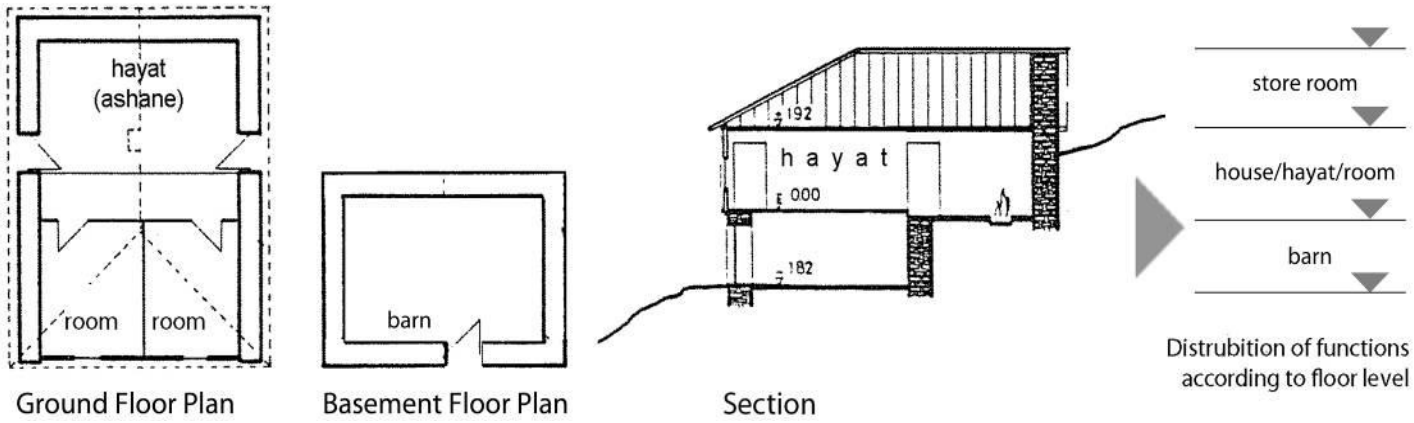

Figure 12. Vertical functional division in Eastern Black Sea dwellings.

lifestyle and the production relations with regard to horizontal and vertical functional dispersion, formation and their location.

As a result of production relations in the region, near to dwelling there are structures called as “serander”. These structures are small spatial units made by wood with the living-production relation that are used to hide-store-dry the food and that protect foods from insects and humidity (Figure 13). Serander is a structure located on the wooden backbone above the ground. It is reached with escalator and it has details that would prevent insects to reach. Furthermore, seranders has a significant role in the regional architecture with their architectural characteristics.

As a conclusion, the impact of socio-cultural characteristics on residential architecture in Eastern Black Sea Region is indicated in Table 3.

CONCLUSION

As can be seen from the examination, formation of vernacular dwellings in Eastern Black Sea Region is related to regional necessitation. All structures from housing scale to the inner space installation (functional expectation as well as aesthetic features) are the reflections of natural and environmental factors and socio-cultural characteristics. All environmental and living data, from the usage of difficult topography in the region to the usage of material that is available in the region, demonstrate a positive image in terms of human-environment-build environment relation. It can be said that all of those forms are significant in terms of human health as well as construction health.

Nowadays, experiences of past are being rejected and a bad referenced, harmful and untraditional structuring is

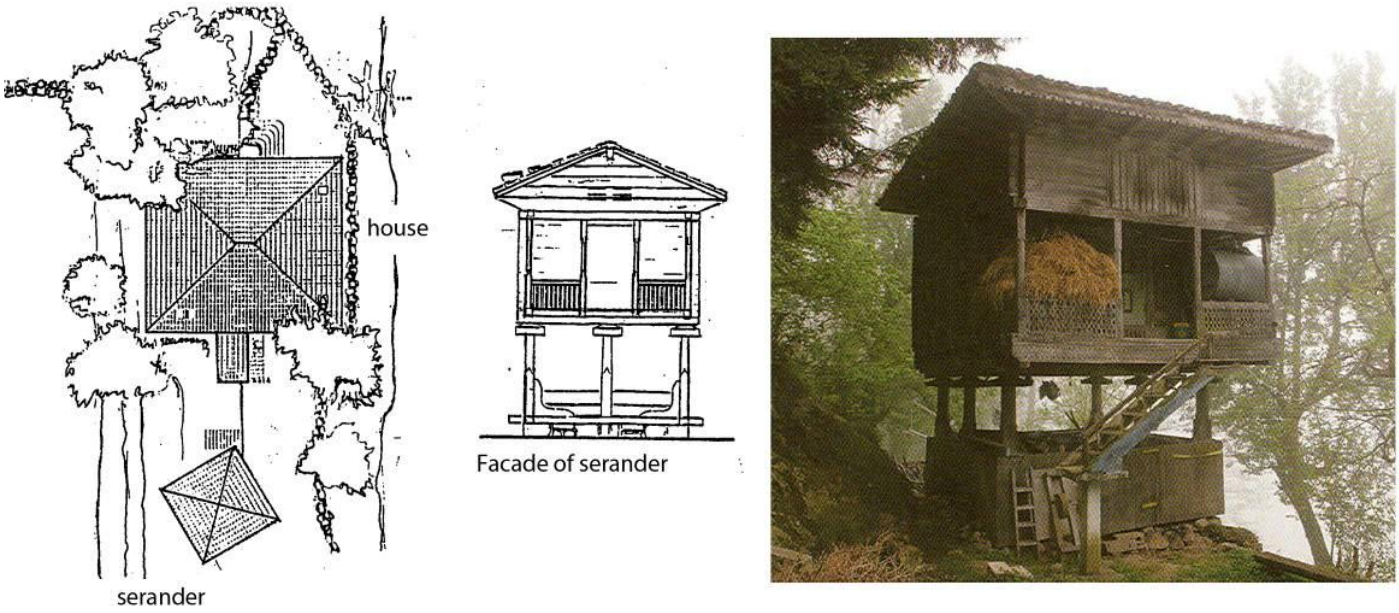

Figure 13. Architectural Element/Serander in dwelling's near surrounding (Ozgüner, 1970; Batur, 2005).

Table 3. The impact of socio-cultural factors on residential architecture in Eastern Black Sea Region.

Socio-cultural factors	Impact on architectural structure
• Production type; agriculture and livestock farming.	• Arranging dwelling and its surrounding for agriculture • Farm and garden in front of the dwelling • Barn in the ground floor • Creation of a place in the roof as storage • Constructing "serander" structure to store product close to dwelling
• Migration to plateau in summer seasons • Plateau festivals/ceremonial activities	• Village/hamlet/plateau settlements
• Neighborhood and social relation	• Facilitation of access to neighbor dwelling • Continuity in dwelling entrance
• Traditional Lifestyle/Islam tradition	• Functional division in dwelling's organization • Different plan typologies with "hayat", and with "salon" type • "hayat" and "salon" places/ multi functional shared areas • "Fireplace" in living areas. • "oven" in some dwellings' shared area.

being preferred. This situation is similar in different regions of Turkey. Nevertheless, implementation of design to environmental data together with solutions found via experiences would be beneficial in terms of creation the compatible, positive and sustainable environments.

It is possible to argue that sustainable areas can be formed with the usage of design principles learned from regional residential architecture in the new dwelling designs.

REFERENCES

Altman I (1975). The Environment and Social Behavior, Privacy, Personal Space, Territory and Crowding.

Brooks/Cole Publishing Company, Monterey, California.

Batur A, Gür ŞO (2005). Doğu Karadeniz'de Kırsal Mimari, Rural Architecture Eastern Black Sea Region. First Edition, Milli Reasürans T.A.Ş. Publication.

Günce K, Ertürk Z, Ertürk S (2008). Questioning the "Prototype dwellings" in the Framework of Cyprus.

Traditional Architecture. Build. Environ., 43(5): 823-833

Sümerkan MR, Usta GK, Ozdemir I, Usta A, Araz A (1993). Principles and Standards of the Rural Housing Typologies Eastern Black Sea Region Qualified Housing Survey. Der. S.O. Gür, S. Erkonak, K.T.U. Müh-Mim. Fak, 4: 61-105.

Gür ŞO (2000). Konut Kültürü, Dwelling Culture. YEM Publication, Istanbul.

Goloğlu M (1973). Anadolu' nun Milli Devleti Pontus. Goloğlu Publication. Kalite Printing, Ankara.

Ozgüner O (1970). Köyde Mimari-Doğu Karadeniz. Middle East Technical University, Ankara.

Rapoport A (1969). House Form and Culture. Prentice Hall, London.

Sözen M, Eruzun C (1996). Typology of the Black Sea Houses. URL Access. September 2011. http://www.evkultur.com/evler/aciklamalar/karadeniztipoloji/karadeniztipoloji.htm.

Sümerkan MR (1990). Traditional Rural Sector in Terms of Factors that Shape the Eastern Black Sea

Structural Properties of the houses (Unpublished Doctorate Thesis). Karadeniz Technical University, Trabzon.

Tosun V (1983). Environmental Forces that Influence House Form in Vernacular Architecture. A Case

Study in the Eastern Black Sea Region (Unpublished Master Thesis). Middle East Technical University,

Ankara.

Tuncel H, Gürgen G, Çiçek İ, Doğu AF (2004). Doğu Karadeniz Dağlarında Yaylacılık. Fırat University Soc. Sci. J., 14(2): 49-66.

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