

Full Length Research Paper

Material-form relationship in traditional residential architecture and its effects on façades

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Accepted 19 May, 2010

Knowing and learning the values and meanings of historical environments and determining the cultural riches and keeping them alive in order to preserve these environments are very important for cultural continuity. In order to do this, first of all, such physical elements as documents with historical characteristics must be analyzed and evaluated. To this end, the center of Sürmene district of the city Trabzon in the Eastern Black Sea region was chosen as the field of work due to the fact that the centre has the best timber construction materials that have come down to the present day. The traditional houses in the Eastern Black Sea Region differ from those in other regions in terms of different uses of timber construction materials. From their masonry systems to their framing systems, the traditional Sürmene houses are important among traditional Eastern Black Sea houses, in that, they use different approaches in the details. In order to do this, a total of 35 traditional houses with the characteristics of traditional Sürmene houses were investigated in terms of material-form relationships and its effects on the façades. Analyses were made on façades, which have the most characteristic qualities. The study employed observation, note taking and measurement techniques and analyses were made under the headings of 'use of floors', 'load-bearing systems', 'roofs', 'windows', 'doors' and 'bay windows'. The aim here was to provide data for new designs by evaluating and interpreting the data obtained.

Key words: Material, form, façades, traditional residential architecture.

INTRODUCTION

As a result of the negative effects that started with urbanization and that in a sense changed and harmed the urban texture, city clarity has been in a process of diminution, and the notion of "continuity from the past to the future" in the cities has been disappearing. Discovering the products of the past and the environments where they were created will make it easy to find a bright way especially for the future. The importance of protecting the cultural heritage is not limited only to familiarizing the prospective generations with the values of the past. In a deeper sense, creating a continuous process of development for the world civilizations is seen as a vital necessity for the use of the cultural richness of

the past as a resource for the creation of the future.

In order for the societies of the world to develop with their distinctive personalities without losing their cultural identities, the integration of these identities with the new living environments is becoming more and more important. Especially in architecture and city planning, the modern formations that are created without a concern for the national and historical values accelerate the alienation in the society (Webb, 1975; Shortridge, 1980). The attempts for the protection of different cultural heritages without discrimination also create permanent gains for the establishment of the feelings of peace and brotherhood among different peoples. Furthermore, the interaction among different cultures in mutual respect creates a rich and multi-colored impetus for the development of the civilization.

As seen from what has been said so far, cultural development is considered to be a sturdy support for the

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social progress, not by ruining but by protecting and improving the traces of the past, the principles aim for a process which will not ruin the cultural richness and accumulation in creating a new identity for the modern society (Mazumdar and Mazumdar, 1997).

All these reasons are enough to explain the necessity to protect and save the traditional house form. The degeneration, which manifests itself in today's physical environment as identity loss, monotony and sporadic corruption, shows that a cultural alienation is taking roots in the depths of social consciousness. The historical environment, which is in a process of fast disappearance, the multi-storey approach, which is an example of an incredible insensitivity and which replaces the historical environment, the problem of mass housing, which is offered as an alternative to the overcrowding in the cities and which lacks the colors of life show how cities turned into their present situations (Mahdavi, 2004). The ever developing technology, standardization in the materials and the easiness that the use of such materials in the construction introduced in the planning stage, and the use of prefabricated elements have brought about some new insights (Abeysondra et al., 2007).

The source of the alienation in the modern day is that architecture has lost its characteristics as an art of daily living, that it has become a mere subject of technology, and therefore it has turned into an object of utility. In short, the house has lost its ties with the past in the modern architecture, and therefore, houses in different places have become similar, not peculiar to the locality where they are built.

Change, development and progress are the natural route for a society. However, this route does not require us to ignore the values of the past, and to disregard the components used in the creation of those values. Exploring the products of the past and the environments in which they were created will also make it easy to find a bright route for the future (Dickens, 1988; Dickens, 1989; Kaplan and Kim, 2004; Jabareen, 2005; Edwards et al., 2005; Youngentob and Hostetler, 2005; Ipekoglu, 2006).

Environment is a living whole. It is in a continuous interaction with the changing conditions. The building, which has no meaning alone gains meaning if it is integrated with the environment, and it is beautiful if it has the character of the environment in which it is built (Harrison and Sarre, 1975; Fawcett et al., 2008). One of the factors that clearly affect the architectural product is the regional characteristics. When we examine the architectural examples produced in different parts of a country, we can easily see that such regional characteristics as climate, local building materials and topography are the determinant factors (Ravetz, 2001; Abeysondra et al., 2007; Cevik et al., 2008; Singh et al., 2009).

In this context, investigating the effects of various materials used in the traditional residential architecture on the construction and form of the building, utilizing the knowledge and experience of our past on the use of materials, and trying to associate them with our modern

day technical and artistic understanding are the aims of this study. The center of Sürmene district in the east of the city of Trabzon which has the best examples of timber construction materials that have come down to us by going through a certain process was chosen as the field of work; and the traditional house architecture was analyzed and interpreted under the headings of 'use of floors', 'load-bearing systems', 'roofs', 'windows' 'doors', and 'bay windows'.

MATERIALS AND METHODS

Field of work – Sample selection – Traditional houses studied

1. The center of Sürmene district of the city of Trabzon in the Eastern Black Sea Region was chosen as the field of work of this study. The façades of 35 sample houses chosen from the district of Sürmene were studied both visually and formally in terms of materials and form (Table 1). Sample houses were chosen in three ways.
2. Interview technique (by interviewing the local people).
3. Observation technique (a fieldwork that aimed to determine the buildings that have come down to the present day in its original form).
4. A detailed data collection work based on a review of various journals, books, city yearbooks, theses, etc.

Having determined the sample houses, collecting information on the characteristics of the houses was carried out in two stages:

1. A fieldwork that aimed to see the sample houses on site for analysis: A form which is used to record the photos, slides, surveys of the houses and the information collected,
2. A literature review to collect information about the sample houses

General information about Sürmene district

Sürmene is a district of the city of Trabzon in the Eastern Black Sea Region (Figure 1). It is on the Trabzon-Rize state road and is bordered by the Black Sea in the north district off the east, district of Arakli in the west, districts of Dernek and Köprübaşı in the southeast and the city of Gümüşhane in the south. The district of Sürmene has a mild winter, and a mild and humid summer. There is no much difference in temperatures between summer and winter times and between day and night. The land rises from the sea coast towards the south. Settlements on the coast are towards the north and the rural settlements are on the slopes of the valleys on the south-north axis (Sümerkan, 1990).

General information about Sürmene traditional houses

When we look at the locational characteristics of the traditional houses, we see a scattered settlement layout. The distance between houses in villages increases while it decreases as one comes closer to the coast. Settlements are on the coast and in the valleys stretching from the coast to the inner parts. Houses are usually located in the middle of the land which overlooks the whole land of the landowner (Figure 2).

The traditional houses in the district were not designed by architects; they were totally formed by the experience of the local building masters. Plan types are: plan with a hayat (literally meaning "life", "hayat" is a sofa-like space where daily activities take place and to which all the bedrooms open) and plan with a

Table 1. The traditional houses studied.

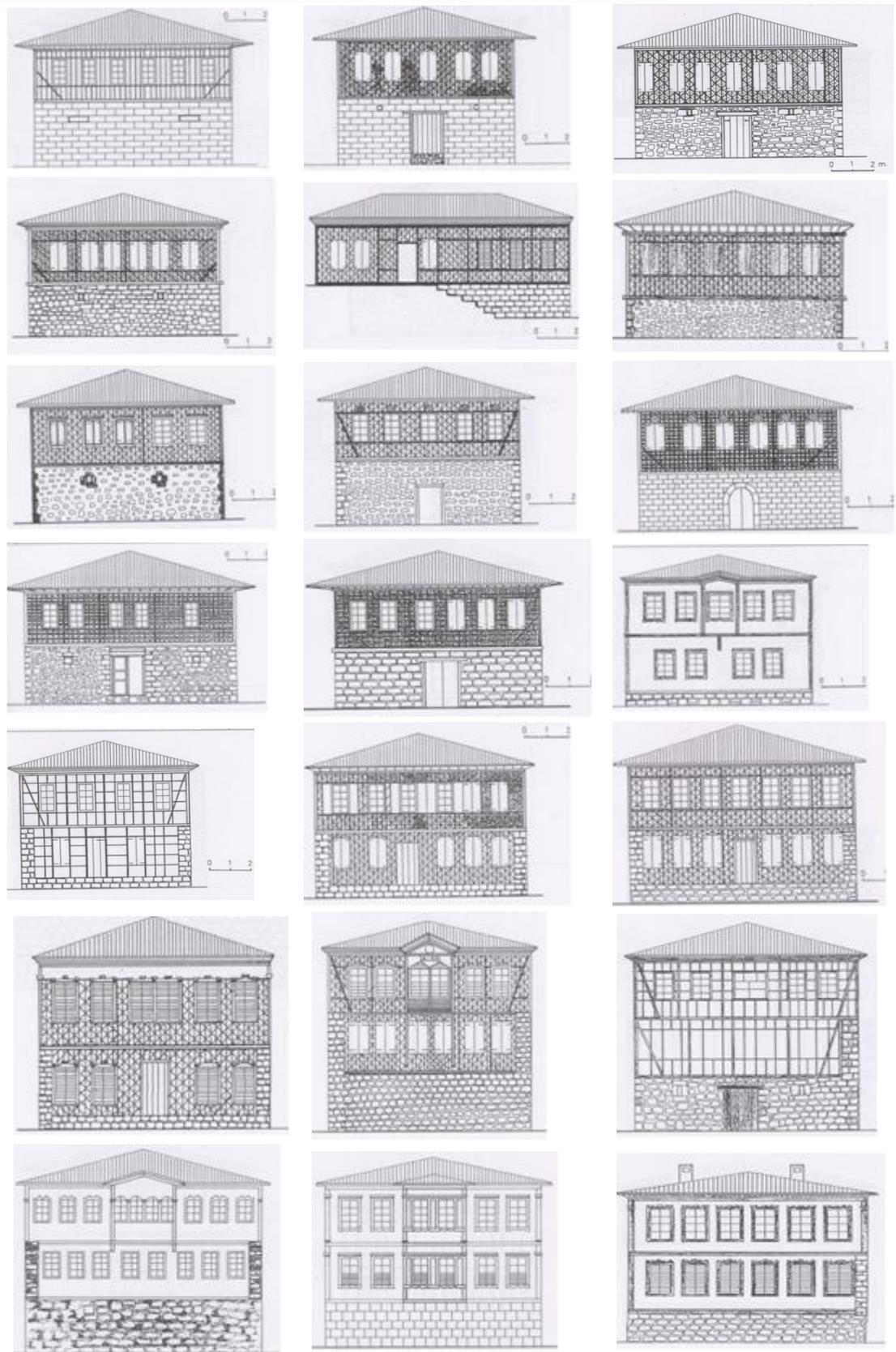


Table 1. Contd.



hayat and an aşhane (a mixture of a kitchen and a living space which is defined below). The hayat plan type is more developed than the hayat-aşhane plan type. Hayat plan type is seen more in houses on the coast than in houses in the country. One of the reasons for this is that people living on the coast can easily

establish relationships with the outside world and that obtaining information is easier. In the hayat plan type, previously all spaces opened to the hayat. Later on, however, because this plan type did not secure a good privacy, a separate space arrangement in the form of a night hall was added as a solution between hayat and

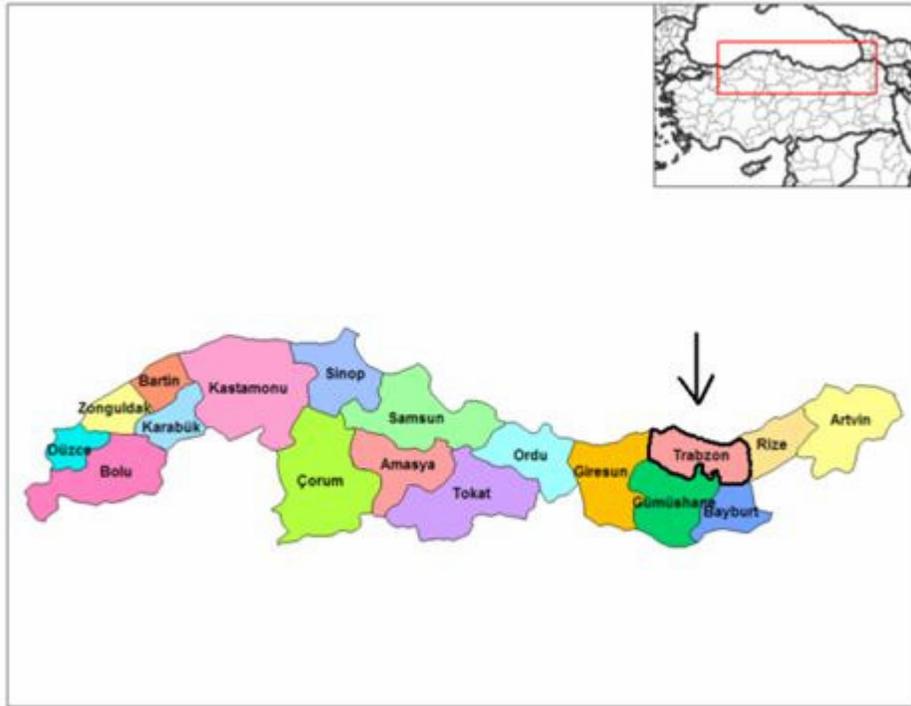
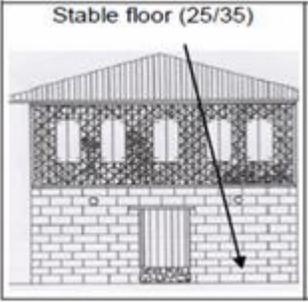
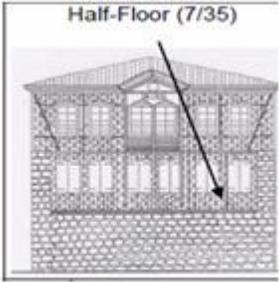
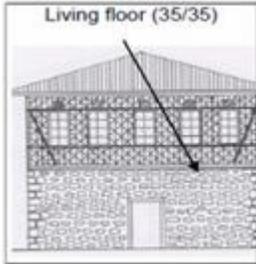
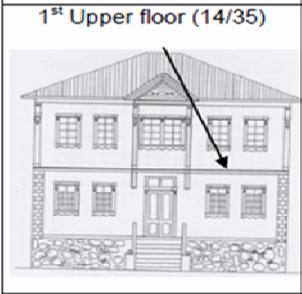
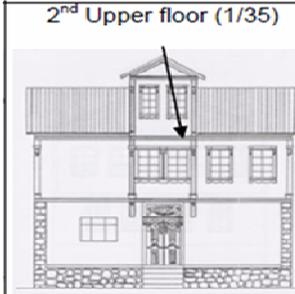
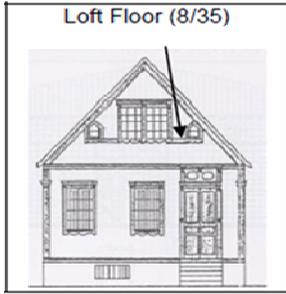


Figure 1. Geographical location.



Figure 2. Examples of located houses that overlook the land.

Table 2. The rates of the numbers of floors in traditional houses.

Floors (35 houses)		
 <p>Stable floor (25/35)</p>	 <p>Half-Floor (7/35)</p>	 <p>Living floor (35/35)</p>
 <p>1st Upper floor (14/35)</p>	 <p>2nd Upper floor (1/35)</p>	 <p>Loft Floor (8/35)</p>

bedrooms. In general, this solution was applied in two ways. In the first solution, the passage space was parallel to the bedrooms and hayat, and in the second solution the passage was placed between the bedrooms perpendicular to the hayat. Examples of two- or more-floor houses can be seen in hayat plan type. In general, ground floors contain rooms in which daytime activities are held, and upper floors contain the bedrooms (Akdeniz, 1994).

Hayat-Aşhane plan type is usually found in the rural areas. In such a house, the aşhane is the place where the household gets together; is the first place that one sees after he enters the house; is a covered place having a fireplace, and in which daytime activities are held. The more developed form of simple aşhane plan type, where all the rooms open to aşhane, is the hayat-aşhane plan type. The living space is connected to aşhane through hayat. The rooms, whose privacy is secured in this way, open to the hayat which is the common space of the house (Çakiroğlu, 1996).

RESULTS

Examination of the materials and form on the façades of the sample houses

Thirty five (35) traditional houses were investigated under the headings of the 'use of floors', 'load-bearing systems-wall construction', 'roofs', 'windows', 'doors' and 'bay windows'.

Number of floors-Use of the floors

The slope of the land is more effective on the positioning of the house than the view and sun. When the invariable

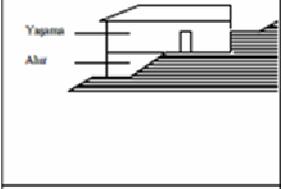
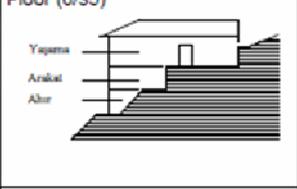
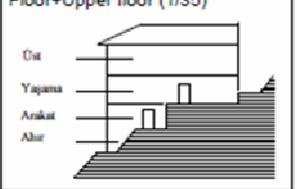
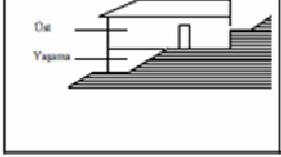
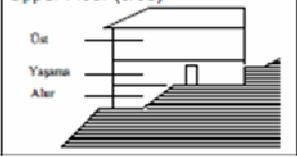
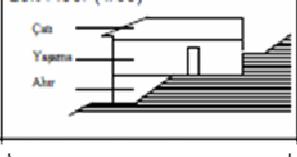
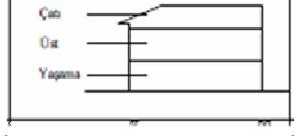
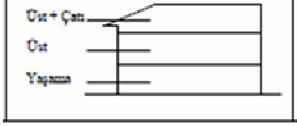
factors of view and sun are not considered during the planning stage, the result is that houses are not parallel to each other and that they are positioned according to the land. Houses usually have two, three or four floors.

The lower side of the slope is usually used as a stable. The stable floor is made in the height gained from the slope. Houses may have front or side entrances. In the two-floor house examples, the living floor may be over the stable, or in places where the slope is very steep there may be a half-floor between the stable and the living floor. While in some examples the half-floor is used as a store, in some, it is used as a living floor. The most important floor in the building is the living floor. The entrance to the building is from this floor. Most of the functionality is on the living floor. The three- and four-floor buildings that were studied contain living floors above the stable and other upper floors. The entrance to the house is from the living floor and upper floors are reached through internal stairs. In some of these examples, the loft is used as a store and in some as a living floor (Tables 2 and 3).

Load-bearing system-Wall construction

In traditional Sürmene house, a composite system made of solid masonry system and framing system are used while solid masonry system is used in the stable floor, framing system is used in the living floor where the main entrance is. The masonry walls are made with different building stones. These are rubble walls, dressed or

Table 3. The rates of the use of floors in traditional houses according to the number of floors.

Two-floor faades (16/35)	Three-floor faades (18/35)	Four-floor faades (1/35)
<p>Stable Floor+Living Floor (11/35)</p> 	<p>Stable Floor+ Half-Floor+Living Floor (6/35)</p> 	<p>Stable Floor+ Half-Floor+Living Floor+Upper floor (1/35)</p> 
<p>Living Floor+Upper Floor (5/35)</p> 	<p>Stable Floor+Living floor+ Upper Floor (3/35)</p> 	
	<p>Stable Floor+Living Floor+ Loft Floor (4/35)</p> 	
	<p>Living Floor+Upper Floor+ Loft Floor (4/35)</p> 	
	<p>Living Floor+1st Upper Floor+2nd Upper Floor (1/35)</p> 	

undressed stone walls, and cut-stone walls. The framing construction structure starts either from the foundations or from the upper end of the walls of the stable floor. 15 × 15 cm ground beams are placed horizontally on the wall. Post capitals are placed horizontally on top of corner posts and mid posts. In timber-frame construction system, the faade is made in different forms depending on the type of binding of posts and on infill system. Three infill systems were used in traditional Srmene houses: These are block wood-infill system in which the filling material is wood; cell-infill system (a grid-like interconnected cellular structure in which vertical posts are divided by horizontal posts, which creates squares or rectangles, in which stone, brick and concrete are used as the filling materials) and triangular infill system (in which vertical posts are divided by diagonal wooden elements) in which broken stones are used as the filling material.

One of the most common construction systems in the area is the cell infill system. The distance between the vertical load-bearing posts varies from 17 to 35 cm between the centerlines. The vertical load-bearing posts are divided by horizontal elements into smaller squares or rectangles. The squares or rectangles obtained are filled with stones. The joints between the small or large block stones and wood are filled with clay and lime mortar. As well as small and large block stone fillers, brick filler and concrete filler were also found in cell infill system. The square or rectangle cells in brick infill and concrete infill systems are bigger than those in small and large block stone infill systems. The spaces between the posts are quite wide. The distances between the posts change between 30 and 60 cm. The faades of the brick walls that are laid with lime mortar are usually not plastered. The wooden load-bearing posts are also divided



Figure 3. Examples of cellular infill systems with brick and stone fillers.



Figure 4. Examples of traditional houses built with cellular infill technique.

horizontally and are sometimes supported by wooden props.

Another filling system other than the cell infill system used in Sürmene is triangular infill system. The vertical load-bearing posts are first placed as in cell infill system; but this time they are divided by diagonal elements with an angle of 45° , and therefore triangular shapes are obtained. The distances between vertical load-bearing posts vary from 20 to 35 cm, which is wider than the distances between the load-bearing posts in the cell infill system. The spaces between the diagonal joints are usually filled. However, there are also examples in which such fillings are not used. Because the triangles are not uniform all over the surface, one-piece block stones were not used as the filling material; instead broken stones were preferred. Stones are laid in the triangles with lime mortar. In triangular infill system, examples of plastered

or nude infill have been found. The infill material with white lime plaster that was applied between the woods that turned black in time, creates a stunning view in the green nature (Figures 3, 4 and 5), (Tables 4 and 5).

Roofs

The roofs in Sürmene are rational forms that are aslope for the quick removal of rainwater and that do not require the use of arris gutters. The very rainy climate of the region affected the formation of the roofs. The roof forms can be divided mainly into three groups. These are saddle roof, three-pitched roofs and four-pitched roofs. In the houses that are built on sloping lands, the rainwater is directed to the sides of the building by using double-pitched roofs in order not to let the rainwater penetrate



Figure 5. Examples of traditional houses built with triangular infill technique with or without infills.

Table 4. Rates of load-bearing systems according to the floors.

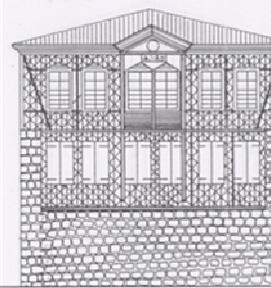
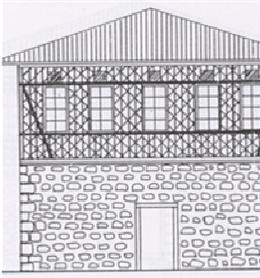
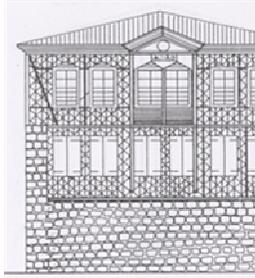
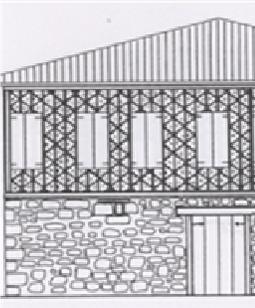
Load-bearing system		
Timber-frame system		
Half-floor (7/7)	Living floor (30/35)	1st Upper floor (14/14)
		
2nd Upper floor (1/1)	Loft floor (8/8)	
		
Stable floor (25/25)	Solid masonry system living floor (5/35)	
		

Table 5. Examples of traditional houses built with triangular infill technique with or without infills.

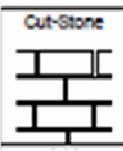
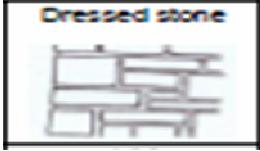
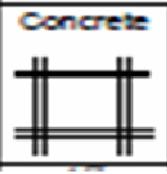
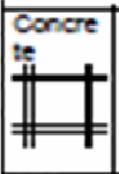
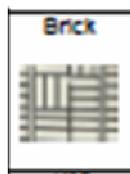
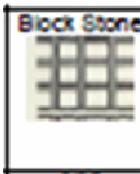
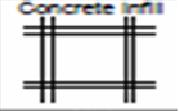
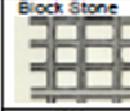
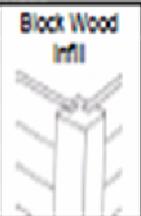
Load bearing system	Sold masonry system						
	coating	plastered			Nude		
							
	Station floor 25/35	5/25	8/25	5/25	4/25	3/25	
Load bearing system	Timber frame system						
	coating	plastered		Cellular infill	Nude	Triangular infill	
							
	Half floor 7/35	5/7	1/7	-	-	1/7	
Load bearing system	Sold masonry system			Timber frame system			
	Coating	Plastered	Nude		Cellular infill	Nude	Triangular infill
							
	35/35	4/35	1/35	3/35	1/35	2/35	1/35
Load bearing system	Timber frame system						
	Coating	Plastered		Cellular infill	Nude	Triangular infill	
							
	1st upper floor (14/35)	7/14	25/14	1/14	1/14	3/14	

Table 5. Contd.

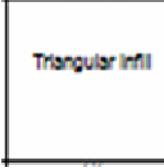
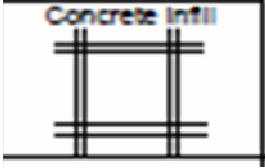
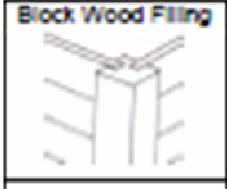
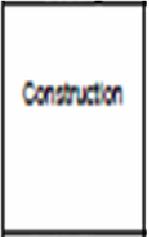
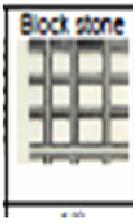
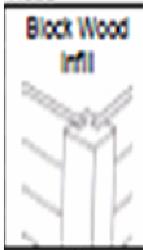
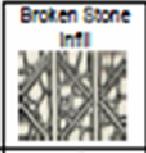
Load bearing system	Timber frame system					
Coating	plastered	Cellular infill	Block Wood Filling	Triangular infill		
						
2nd upper floor (1/35)	1/1	-	-	-		
Load bearing system	Timber frame system					
Coating	Plastered	Cellular infill	Nude		Triangular infill	
						
Left floor (8/35)	3/8	-	1/8	1/8	2/8	1/8



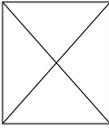
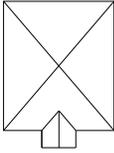
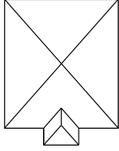
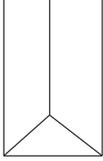
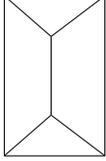
Figure 6. Terracota tile cover material and examples of veneered and fair faced eaves.

into the foundations of the building. Because of the negative effects of the very rainy climate of the district on the wood, the eaves of the houses are wide. While the widths of the eaves are less in the center of the district, they become as wide as 50 cm as one goes away from the center. In order to prevent the roofs from deforming under snow and cover loads, eaves props is used. As seen in the examples where the rafters are extended freely, it was found that eaves props join the rafters above the ceiling beam either in a slanting position or horizontally. While some parts of the eaves are covered with batten, other parts are not. It was also found that in

some examples, the corners of the eaves were rounded. In the past the roof covers were wooden tiles and terracotta tiles, but now sheet iron is also used as a roof cover. The most commonly used cover material in Sürmene is terracotta tiles.

Roofs were examined in terms of roof forms, eaves forms and roof cover materials. In accordance with this, the most common roof forms in the 35 houses examined in Sürmene are the three-pitched and four-pitched roofs. Ten (10) of the 35 houses were found to have four-pitched roofs and 6 of the 35 houses three-pitched roofs (Figure 6 and Table 6).

Table 6. Rates of roof forms in traditional Sürmene houses.

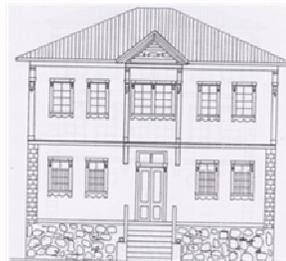
							Other
4/35	2/35	2/35	6/35	10/35	3/35	2/35	6/35

Terracotta tileRoof cover material
(35 houses)

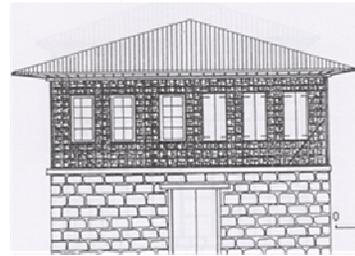
35/35

Veneered Eaves

Fair-faced Eaves

Eaves form
(35 Houses)

19/35



16/35

**Figure 7.** Examples of shutter windows, clerestories and parapet windows.**Windows**

Windows are usually vertical diagonal in shape and wood. In some of the houses, windows have shutters. For security reasons, the windows on the living floor have

iron grilles. The grilles of the windows on the upper floors may be half-length or full length. Most of the windows are vertical sash windows. French windows, clerestories and parapet windows are the other window types found in these houses (Figure 7 and Table 7).

Table 7. Rates of windows in terms of their panes and materials, rates of bay windows on façades.

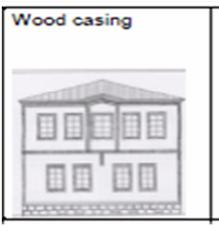
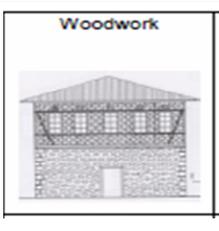
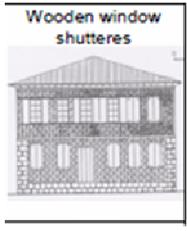
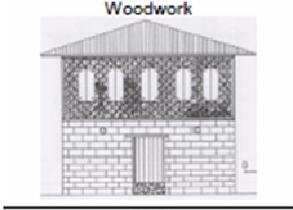
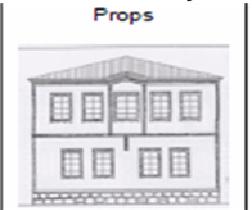
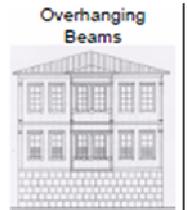
Wiyhout panes	Hzizontal-2	Hzizontal-2 vertical-4	Hzizontal-3-6 vertical-4	Hzizontal-3 vertical-2	Hzizontal-3 Vertical-2-3	Hzizontal-4 vertical-4	Hzizontal-4 vertical-2	
22/35	1/35	1/35	1/35	2/35	1/35	1/35	34/35	
Woodwork								
Windows (35 houses)	<p>Stone casing</p>  <p>14/35</p>	<p>Wood casing</p>  <p>18/35</p>	<p>Woodwork</p>  <p>9/35</p>	<p>Wooden window shutteres</p>  <p>14/35</p>				
	Woodwork							
	Door (35 houses)	<p>Stone casing</p>  <p>2/35</p>	<p>Wood casing</p>  <p>12/35</p>	<p>Woodwork</p>  <p>21/35</p>				
		Bay windows (12 houses)	<p>Bay Window on one Props</p>  <p>7/35</p>	<p>Overhanging beams</p>	<p>Bay windows on Props</p>  <p>2/35</p>	<p>Bay windows on Overhanging Beams</p>  <p>3/35</p>		
-								



Figure 8. Examples of an entrance and a rare door detail.

Doors

Doors are usually two-leafed. The houses have two doors: one is the entrance door which opens to the living floor and the other opens to the stable floor. At the

entrance doors, decorations are found around the doors. The doors of the houses in the center of the district, which have plastered façades have decorations. The doors on the nude façades are rather simple (Figure 8 and Table 7).



Figure 9. Examples of bay window on one and bay windows on.

Bay windows

Depending on their positions in the building, bay windows may be as wide as the rooms and single or double. Bay windows are one-way and have overhanging beams and props. Two-way Bay windows were found in a few examples (Figure 9 and Table 7).

The façade characteristics of traditional Sürmene houses

The façade characteristics of traditional Sürmene houses can be listed as follows (Table 8):

1. The number and use of floors: Houses usually have two or three floors. The use of floors: Floors are used in combinations of stable floor + half-floor + living floor, and stable floor + living floor. The most common floors are the stable floor, living floor and the 1st upper floor. The entrances to the stable floor and living floor are from different façades. The stable floor is at the bottom side of the slope and entrances to the living floors are from the side fronts.

2. Load-bearing system-wall construction: Houses have a composite system that uses solid masonry system and timber frame system on the floors. The stable floor has a solid masonry system. The stable floor is usually built with cut-stone, rubble stone, pitch-face stone, or dressed stone, and its walls are usually nude. The half-floor has a timber frame system. While the half-floor is generally plastered, examples of nude triangular infill and cell infill were also found. The living floor has a timber frame system and plastered infill or nude triangular infill was found. The 1st upper floor has a timber frame system, and examples of plastered infill or nude triangular infill, cell infill and triangular block wood infill were also found. The loft floor has a timber frame system and examples of plastered infill and nude triangular infill, cell infill, and block wood infill were found. Construction is reflected on the façade and has become a characteristic of the

façade. The timber surfaces that are left unpainted turn brown in time and therefore are naturally colored. In cell and triangular infill systems, plastering the filling materials creates a charming contrast between the wood color and white. This texture can have a strong decorative effect.

3. Roof: The most common roof forms are three-pitched and four-pitched roofs. Eaves are either veneered or fair-faced. In fair-faced examples, an air passage into the roof space is provided. Roof cover material is terracotta tile.

4. Window: Windows are usually rectangular and single-leafed. Windows have 4 horizontal and 2 vertical panes, and are vertical sash windows. Windows are wood and have wood casings, stone casings, and wooden shutters and generally have iron grilles. There are different forms of casing.

5. Door: Because of the plan type, houses usually have two entrances. In high pitched areas, the entrances are from the side fronts. Doors are usually wood and have wooden casings.

6. Bay windows are not common on the façades. There are bay windows on one (on one floor) or bay windows on (on two floors) and they have overhanging beams and props.

DISCUSSION

In their studies, Jabareen (2005) and Fawcett et al. (2008) have identified the strong environmental factors and traditional life that affect the shape of the traditional vernacular architecture. On the other hand, Mazumdar and Mazumdar (1997), Arthur and Stamps (1999), Kaplan and Kim (2004) and Youngentob and Hostetler (2005) stated that the traditional settlement areas and new settlement areas should be shaped by integrating into each other and that the past should be respected, and they introduced the physical and psychological dimensions for this. A study carried out by Abeysondra (2007) in Sri Lanka revealed that the environmental, economic and social factors affect the formation of doors and windows. The studies carried out by Cardinale and

Table 8. Façade characteristics of traditional Sürmene houses.

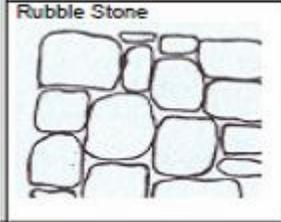
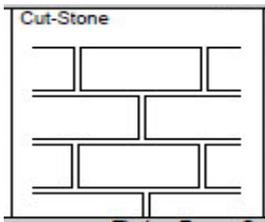
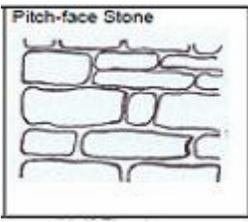
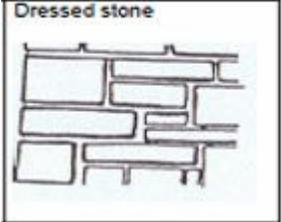
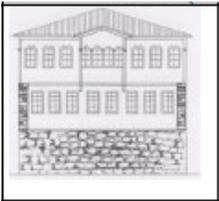
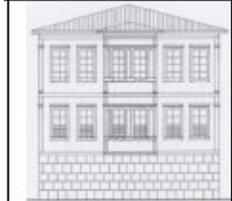
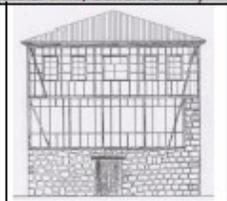
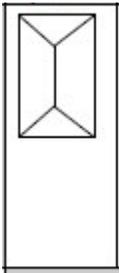
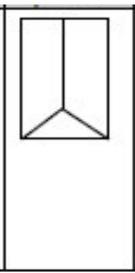
General characteristics of traditional surmene house architecture			
Numbers of floors and use of floors			
Numbers of floors		Use of floors	
3rd floor	2nd floor	Stable floor + halh floor + living floor	Stable floor + living floor
			
Load bearing system – Wall construction			
Solid masonry system (stable floor)			
Nude wall			
			
Timber frame system (Half floor)			
Plastered (Triangular infill)		Nude (tiangular infill, cellular infill, concrete infill)	
			
Timber frame system (Living floor)			
Plastered (Triangular infill)		Nude (tiangular infill, cellular infill, concrete infill)	
			
Timber frame system (Living floor)			
Plastered (Triangular infill)		Nude (tiangular infill, cellular infill, concrete infill-Block wood infill)	
			

Table 8.Contd.

Plastered (Triangular infill)		Nude (tiangular infill, cellular infill, concrete infill-block wood infill)			
					
Roof					
Roof form		Roof cover material	Eaves form		
Four pitched	Tree pitched	Terracota tile	Veneered eaves	Four faced eaves	
					
Window		Material	Door		
According to their panes	Material	Material	Material		
4 horizontal- 2 vertival	Timber	Timber	Timber		
					
Bay window					
Bay window on one floor		Bay window on two floor			
Props		Props	Overhanging beams		
					

Ruggiero (2002) and Singh et al. (2009) have identified bioclimatic effects stemming from the forms and sizes of the doors and windows in the traditional vernacular houses. On the other hand, Çevik et al. (2008) have identified the formal characteristics such as doors and windows on the façades, and number of floors of the traditional vernacular buildings.

This study tried to uncover the architectural characteristics of the traditional houses in order to help provide some preliminary information for the new houses to be designed.

One of the factors that clearly affect the architectural product is the regional characteristics. When we examine the architectural examples produced in different parts of a country, we can easily see that such regional characteristics as climate, local building materials and topography are the determining factors.

In this context, it is necessary that the present traditional houses be used without changing their originality. This may contribute to the preservation-maintenance of the cultural heritage. To this end, repair works and improvement works in such houses are essential. Especially such issues as infrastructure, plumbing, sewer system must be improved. The important thing here is to preserve the texture of this area, and to ensure that the settlement texture of the new houses to be built and their close environment must be built in accordance with the vernacular architecture.

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