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Parametrising Historical Islamkoy Courtyard-Dwellings: Spatial Quality Parameters and Examination Based on AHP Method

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ABSTRACT

Throughout the historical process humans have shaped the environment that they lived in and developed it according to their needs. The living culture has been formed with various spatial setups in dwellings which are the most basic habitats of humankind. Today, functionality comes into prominence in this living culture which is referred to as traditional dwellings. This shows that the continuity is ensured by presenting mass and cultural harmony between spatial setups and the garden and neighboring dwelling relations. Amongst the traditional dwellings, Turkish house is also considered as an important example, which provides continuity with its diverse plan organizations and spatial characteristic. The courtyard character in traditional dwellings is the space that is effective in the organization of spatial which sheds light on present day with various parameters. This is because the dwelling is located in the courtyard. Moreover, the courtyard, which starts with the entrance and where the households carry out their daily lives, is very significant for the Turkish dwelling as it contains both natural and cultural characteristics. The traditional dwellings of the village of Islamköy, which is located in the Atabey district in Isparta province of Turkey, are discussed within the scope of the study, which examines how the concept of courtyard that contains the functional and aesthetic values of the Turkish dwelling, forms various plan organizations and spatial characters in many cultures, affects the spatial quality. Spatial quality parameters were examined on five second-degree registered traditional dwellings located on Okul Street in the Islamköy village. Three basic principles have been determined which are functional, aesthetic and ecological and the sub-parameters of these determined principles have been introduced with the information and documents obtained from the literature. The AHP method was used to determine the priorities of the parameters in this direction. Thus, taking into account the spatial quality parameters, the priority parameters of the courtyard character in the traditional dwellings of Islamköy were determined.

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1. Introduction

From a historical architectural perspective, traditional dwellings have been shaped by culture and requirements. Thus, the characteristic forms in the plan schemes emerge. Moreover, the unique architectural texture and identity of the region is formed (Asquith and Vellinga, 2006). The spaces that show the typology of traditional dwellings from every culture are different. Dwelling typologies that allow classification have taken its place in traditional architecture with ideal space (Johnson, 2003). Many examples can be given to these places such as room, hall, patio and courtyard. The courtyard, which Hasol defines as "the open space in the middle of a building or group of buildings, surrounded by walls or buildings"; at the same time, it shows the characteristics of both open and semi-open spaces. With this feature, it is important for traditional dwellings and plays an important role in shaping the dwellings.

Courtyard structure is seen in many parts of the world (Taleghani, Tenpierik, and van den Dobbelsteen, 2012) and plays a leading role in the oldest architectural organization planning (Almhafdy, Ibrahim, Ahmad, and Yahya, 2013). Even though the courtyard has different functions in different spaces, it is generally considered for the dwelling, which is the most basic building unit (Hyung-Ock Hong and et al., 2001). For instance, the gathering area where social and family-oriented activities are held such as cooking, working, playing and satisfying the shelter needs of animals are just a few of them (Almhafdy, Ibrahim, Ahmad, & Yahya, 2013). In addition to the functional aspect of the dwelling such as determining the typology, the courtyard also has an important task such as determining the cultural values. So it can be said that the courtyard is a place that symbolizes culture (Edwards, Sibley, Land, Hakmi, 2006).

Courtyards, which are considered as developing social relations and providing a flexible and dynamic spatial effect, show different physical formations from place to place (Rapoport, 2007). These places are called the open, semi-open or semi-public space of the house. Cultural factors, social and individual identity factors are the main determinants in the formation of this difference. For instance; Chinese dwellings' courtyard type are classified as inner courtyard. This structure is a result of the need to maintain family control (Xu, 1998). The same structure has emerged with the need for privacy in the courtyard types of southeast dwellings in Turkey.

Courtyard spaces have functional and cultural features as well as many ecological features. In fact, it is seen in many studies that ecological features have important effects on the shaping of the courtyard. Especially in the courtyard spaces that are formed in a climatic sense; the central courtyard type was often used in tropical countries. All rooms face the central courtyard, and the design of the courtyard functions as natural cooling in hot weather, turning the indoor environment ergonomic. The courtyard, which is supported by auxiliary building elements and materials such as the water element, serves as a place where thermal comfort is obtained (Dunham, 1961). This structure ensures the sustainability of ecological features by adapting it to cold climates.

1.1. Research Objective

In the studies, the concept of courtyard in traditional dwellings has been mentioned frequently. In addition, many analyses and evaluations have been conducted on the courtyard character of traditional dwellings. In particular, dozens of studies have been carried out on "the importance and place of the courtyard in the Turkish dwelling" as the most basic subject. Unlike the previous studies, in this study, a detailed examination of the spatial quality parameters of traditional dwellings with courtyard features has been made. Isparta/Islamköy, which constitutes the main material of the study, has a very characteristic planning in terms of housing and courtyard typology. In this study, it is foreseen to complete the deficiency in the literature in terms of both "the originality of the field study" and "the parameters examined". At this point, considering the parameters discussed in the intersection of Turkish dwelling and spatial quality, answers to the following questions was sought within the scope of the study.

- What are the social, cultural and ecological quality parameters which determine the courtyard character of the Turkish dwelling?

- How are these determined parameters exclusively observed in Isparta Islamköy traditional dwelling?

- How is the relationship and significance level between these parameters statistically?

As a result of the study, primarily determined spatial quality parameters are a base for future studies. Parameters can be evaluated for further studies. The parameters obtained with statistical data and the relationship/importance levels between them are strategic information for the design and planning decisions to be made for traditional dwellings. In addition, it is foreseen that the study complements the deficiency in the literature.

2. The Courtyard In Turkish Dwelling

Turkish dwelling has been classified according to many features such as location, climate, plan features, facade layout, and number of floors, building material, construction system or window-door ratios. For instance, it is classified in terms of plan features; without hall, with outer hall, with inner hall, with middle hall (Eldem, 1955: 24). It provides continuity as a whole with space organization and mass order, and reveals a value with various typologies. Among these typologies; open, closed and semi-open spaces form the spatial setup. In the Turkish dwelling, where open and semi-open spaces gain importance with the combination of culture and needs; courtyard character seems to come forward.

The concept of courtyard, which plays an important role in determining the typology of the Turkish dwelling, in its most

basic sense; it refers to an open, walled area in the middle of a building or building group, patio, vestibule, hall (TDK, 2021). According to the art encyclopedia; it is defined as a closed, open, square-like space (Arseven, 1943). When considered architecturally; it emerges as spaces that are compatible with the building, shaped in various forms and integrated with open patio as a result of needs (Erdoğan, 1996). The history of the courtyard dates back to ancient times. Courtyards were found in settlements belonging to the Neolithic period such as Çatalhöyük, Hacılar and Çayönü in Anatolia. Courtyards in geometric fiction are clearly perceived (Aydın, 2000). In terms of spatial setup, the courtyard; basically aims defense to protect from the outside world. Apart from this, it has been made functional with requirements such as providing air and light and throwing waste (Esin, 1994). In addition, the pit where the garbage is put and toilet are also located in this place (Mellaart, 1970). It is possible to see examples of the courtyard, which was shaped by the materials, technology and lifestyle, brought by the culture and needs along with the process.

Courtyard has been discussed by many researchers as it has a strong history and has been shaped by various factors. Courtyards are classified according to various parameters. One of these; is the classification made according to ground floor locations and indoor-outdoor area ratios (Pfeifer and Brauneck 2008) (Figure 1)

Another classification is Reynolds' (2001) classification on spatial setup. In this classification, criteria were determined according to the entrance locations of the courtyard and access to the courtyard after the entrance. Apart from this, the typological form of various countries, the plan scheme, and the relationship with the facade facing the courtyard were also taken into consideration (Ekim, 2012). The place indicated by the arrow sign in the figure is expressed as the entrance area to the residence from the street. The pink colored areas symbolize the courtyard (Figure 2).

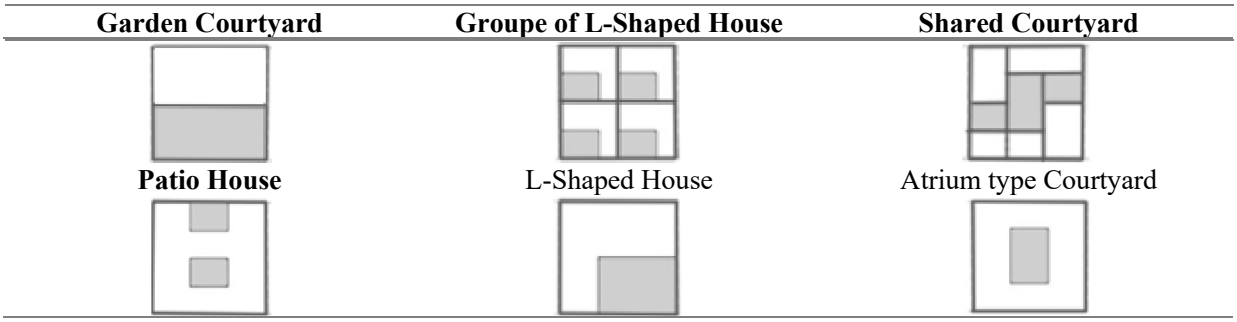


Figure.1 Courtyard types (Pfeifer and Brauneck 2008; Ekim, 2012)

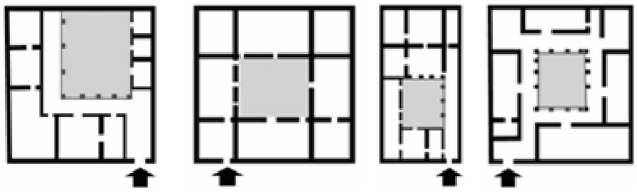


Figure.2 Types of entrance to the courtyard (Reynolds, 2001)

Although the typological elements of different countries are revealed in the classifications shown above, the courtyard features of the Turkish dwellings are also shaped in the same way. In this typology variety, functionality is considered the main point (Kuban, 2002). Apart from this, there are many factors that affect shaping. The courtyard character in the Turkish dwelling can be examined in the most general sense under two titles, physical and social. Physical factors can be considered as; climate, topography, geological structure, vegetation (Taşçıoğlu, 2013), and social factors can be considered as; culture, security, privacy, lifestyle, flexibility. All these factors affect the form of the courtyard in the Turkish house, the elements used in the courtyard, the materials, the functional units in the courtyard, the positioning and provide diversity. In the Turkish dwelling particularly, many examples of this diversity can be given.

Climate from physical factors is one of the factors that affect shaping the most (Taşçıoğlu, 2013). There are sub-factors of local climate such as temperature, radiation, humidity and wind, and the effect of these factors on the courtyard design ensures sustainability. For example; In Diyarbakır dwellings, the importance of the courtyard is extremely large. Climatic transformation is applied in the dwellings where there are solutions according to the climate. In the courtyard, the materials such as pool and tiered, ornamental fountain are generally used, and the materials on the flooring are designed to protect them from the hot weather climate (Direk, 2006). Dwellings with courtyards where the topography is effective can be found in Mardin. Terracing system is seen in residences in Mardin, which has a high-rise land structure. The courtyard types shaped accordingly also change their form according to economic and climatic factors (Karagülle and Demir, 2011). As another example; the courtyard space in Erzurum dwellings has

become an element included in the dwelling due to the climate and topographic features. The decrease in air temperature in winter caused the courtyard to be closed by combining with the tandoor house (Gök and Kayserili, 2013).

One of the most important social factors is culture. Culture contains information that sheds light on lifestyle, family and society structure. Due to that, the effect of privacy on the formation of the Turkish dwelling courtyard is huge. For example, in Erzurum dwellings, the men and women sitting in separate spaces affected the formation of the courtyard and obliged to pass these spaces separately (Gök and Kayserili, 2013). In Beypazarı dwellings, the courtyard emerged as a result of social needs and became a place where neighbor relations were strengthened by being called the place of women (Hatipoğlu, 2015). Another example is the Urfa dwellings. In the region where privacy is experienced at a high level, the space is oriented inward and lined up around the courtyard. The facade of the courtyard facing the street is surrounded by high walls and shows a massive formation without any openings (Güzel, 2013).

To sum up, the courtyard space in the Turkish dwelling, with various forms, is a very important place that displays multifaceted features with social, cultural and ecological factors and acts as a buffer between housing and public space.

2.1. Landscape Features in Turkish Dwelling

Among the main defining features of the Turkish dwelling, the presence of the courtyard character reflects the traditional lifestyle. For this reason, it plays an important role in shaping the traditional rural settlement landscape (Köse, 2007). In other words, local vegetation emerges as effective elements in the courtyard character of the Turkish dwelling.

The physical and social features that play a role in the shaping of the courtyard in the Turkish dwellings are also applicable to the plant elements in the courtyard. For example, climatic features affect the landscape character of the courtyard and therefore the use of plants. In order to provide thermal comfort in hot regions, shading vegetal elements are used. In narrow courtyard types; small-leaved, compact plants are used in order to benefit from sunlight and daylight (Johnston and Newton, 2004, Cooper, 2003; Hindistan, 2006). In addition to all these, soil depth and structure are important in terms of the type and presence of plants grown in the courtyard.

The herbal elements in the Turkish dwelling have an ecological architectural structure that is compatible with nature. Due to that reason, it is possible to see herbal elements in almost every courtyard in the Anatolian geography. It is seen that flowering plants and fruit trees are frequently used in Turkish dwelling courtyards, as physical and social factors are also effective. Although these elements do not have any order or criteria, they appear as striking elements both horizontally and vertically (Bozkurt and Altınçekiç, 2013). Apart from this, decorative plants can be seen grown in pots or local accessories. Thus, the courtyard landscape in the dwellings is diversified and shows a characteristic feature with physical and social factors.

2.2 Courtyard Features of İslamköy Dwellings

Islamköy dwellings have been started to be built since the 1900s and many residences have managed to reach the present day without destroying their original structure. Islamköy dwellings, which show typical Turkish dwelling characteristics usually consists of an outer hall, and examples with an inner hall are also seen. Plan types with outer halls are classified within itself according to the feature of having 2, 3, 4 and 5 rooms. In the dwellings where local materials and construction techniques are seen, there are local places such as a house from the ground, haney altı, and main places such as a room, hall, headroom, barn, and hayloft (Koç, 2019).

Courtyard is one of the common usage areas in the Turkish dwelling; where family relations are intensely experienced as a result of needs and cultural accumulation. For this reason, they are places where many functions can be performed and are compatible with the environment. The location of the courtyard is also very important in İslamköy dwellings. Due to the absence of active homeowners in many residences, the courtyard character was damaged due to environmental conditions and lost its original function (Figure 3).

Figure.3. Example of courtyard in Islamköy traditional dwellings

Considering the cultural structure and lifestyle of the region and the village, it turns out that the courtyard is quite characteristic. The courtyard, which starts with patio, appears as a place where circulation is intense. Vertical circulation (stairs) is also mostly included in patio. Apart from this, there are also various venues and units. Figure 3 shows the courtyard character, which is

about to lose its quality due to neglect, since most of the houses do not have permanent homeowners. However, some residential courtyards have spatial boundaries, and various functions, units and plant elements are seen within themselves. The spaces located in the courtyards of the İslamköy residences; are grouped under three titles as open, semi-open and closed spaces. Open spaces are used for seating and various activities; semi-open spaces are used for storage areas such as warehouses, depots, and closed areas consist of places such as barn and hayloft. There are units in open spaces; such as trough, molasses pool, poultry house. These units vary or differentiate due to the need for each residence. Considering the landscape features, it can be found fruit trees such as apple, pomegranate, quince and pear trees. Apart from this, there are also trees such as poplar, pine and herbal elements.

3 .Study Area

The village of Islamköy, which is in the Atabey district of the city of Isparta, located in the south of Turkey, was considered as the study area. Islamköy is an important residential area due to its strong history, rich socio-cultural characteristics and ecological structure. Apart from these, it is frequently mentioned in the political sense as it is the village where the ninth President of the Republic of Turkey Süleyman Demirel was born and grew up (Koç, 2019) (Figure 4, Figure 5).

Islamköy has come until today with the status of municipality and town, and has been continuing as a village since 2014. Its history dates back to ancient times. The village has a transitional climate. It has flat land from a topographic point of view. In the region, which has quite a lot of arable land; apple and vegetable orchards are mostly seen. Apart from agriculture, there are also livestock and industrial activities (Üstün, 2016). The village, which has tourism potential; is located on important tour routes. Besides, with the mausoleum and Social Complex (Kulliye) of Süleyman Demirel, the ninth President of the Republic of Turkey in the village, it is becoming an important village with the presence of a first-degree registered cistern and second-degree registered traditional residences (Koç, 2019).

There are two main arteries in the village, namely "Hürriyet" and "Cumhuriyet" Street. Demirel and 100. Yıl parks are found between two arteries.

Working route was chosen as Okul Street because it is on an important artery. On the route; 5 traditional registered second-degree dwellings; investigated within the scope of the study. The five dwellings discussed in the study reflect the cultural structure of the region and embody the plan typology of the Islamköy dwelling. In this context; dwellings 1, 2 and 5 have a plan type with outer hall, and dwellings number 3 and 4 have a plan type with inner hall. Dwelling number 1 has four rooms, dwelling number 2 has three rooms and dwelling number 5 has two rooms. There are no permanent residents in the residences.

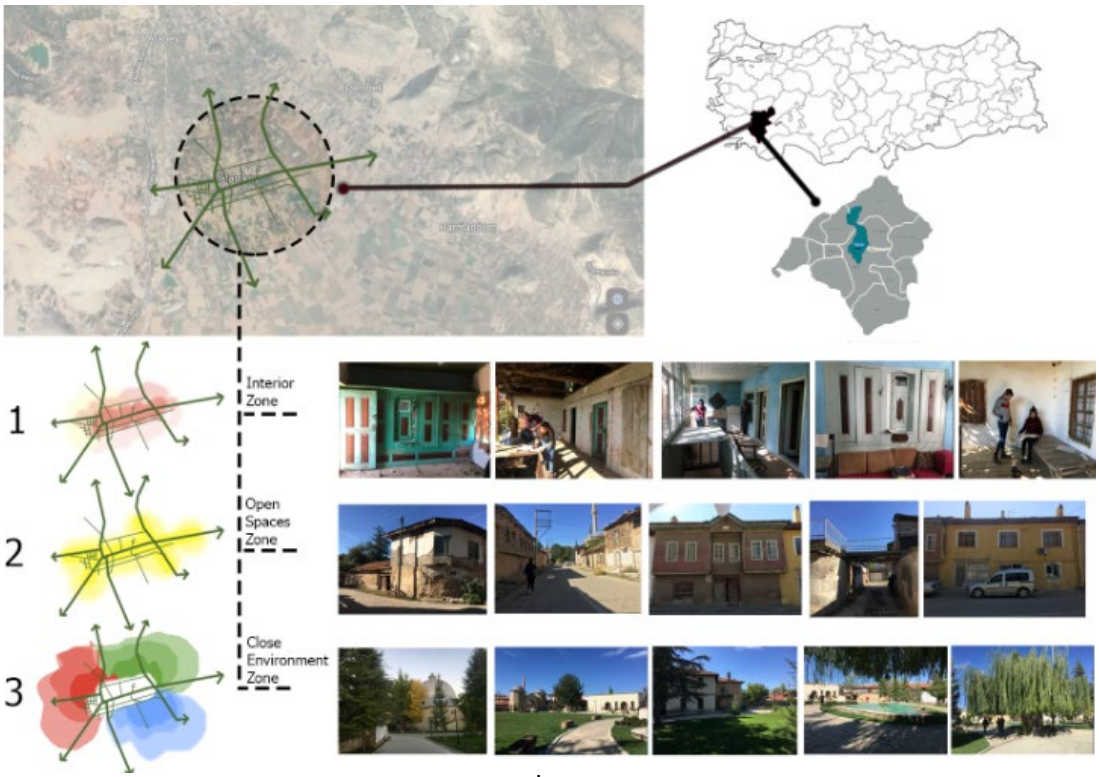


Figure 4. Location of İslamköy (Google Earth)

Figure 5. Location of İslamköy/Okul Street and second-degree registered residences

4.. Method

The method was carried out in 3 stages. These stages are;
- Field and observation study,
- Establishment of criteria
- The statistical method (AHP) (Figure 6).

More than one method was used for the purpose of the study. Each stage follows each other and forms the basis for the previous one. In the first stage of the method, Isparta / İslamköy was visited for field and observation studies. With a study of approximately 10 days, 5 second-degree registered traditional dwellings were selected, observed, photographed and measured.

After the observation, land and measurement studies of the houses, the literature data was searched in order to create "spatial quality criteria" specific to the traditional houses suitable for the study purpose. At the end of the stage, "spatial quality criteria" specific to traditional houses were established.

In the last stage of the study, the reliability of the field and literature studies with the statistical method, the relations between them and the priorities of the criteria were measured. The general flow diagram of the study is as in Figure 2.

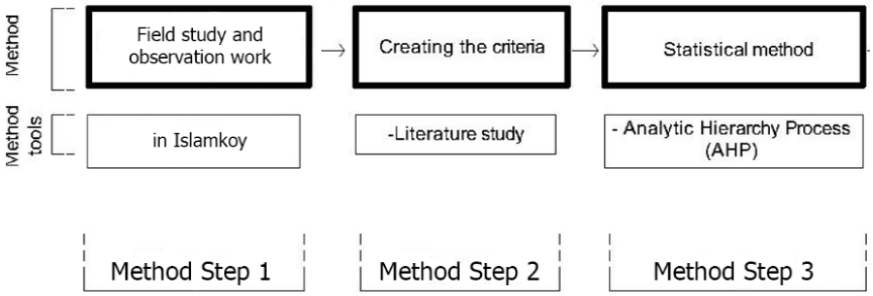


Figure 6. Methodological framework

In the second stage, statistical methods were used to determine the relationship between the criteria created by the literature study. AHP is a method that allows individuals or groups to make decisions in a complex situation. Thanks to AHP analysis; 12 scale criteria created in literature studies by means of the weights of the criteria calculated, it will be decided which ones should be gathered under the same group. For the analysis, a hierarchy of criteria was created in the first stage. This is called decision modeling (Figure x). Decision modeling was created by following the steps below (Saat, 2010, Leal 2020).

1- The main purpose of the decision-making process has been identified (analysis of the spatial quality of the court). The purpose is written at the top of the modeling.
2- At the second level of the matrix, alternatives that meet the primary goal are identified. Alternatives were created in 3 groups; social quality, cultural quality, ecological quality.
3- At the third level of the matrix, 12 criteria are defined, each of which defines the alternative.
4- Calculate the priorities of each alternative within each criterion ascending in the matrix to the main objective.

After these steps were carried out and the matrix was created, another stage was started. This is the stage where expert opinions are included. The comparison of the criteria is done both among themselves and among all alternatives for which each criterion is determined (Dağdeviren and Eren, 2001). Thus, a transition is ensured from producing solutions to the decision stage. This shows the (weighted) comparison between these criteria. Experts (urban planner, landscape architect, and architects) were interviewed for the comparison (pattern weighting) between the criteria (Figure.7).

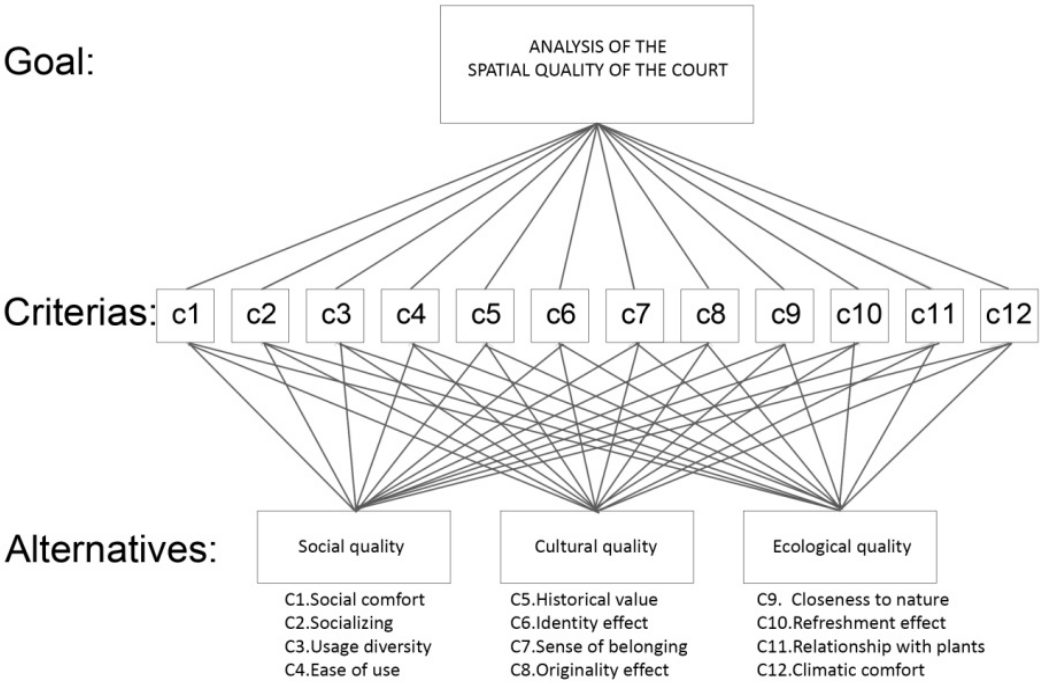


Figure 7. Hierarchy of spatial quality criteria for AHP process

The final step in the AHP process is to establish their relative priorities (weights) for the criteria. The relative weights of the criteria with respect to each other were obtained. The importance or weight of each criterion is different, and therefore, comparisons were made with a numerical scale developed by Saaty (2012) (Table 1). This scale enables to establish the relative priority of each criterion over the others through pairwise comparisons. In order to determine the consistency of pairwise comparisons, the consistency ratio was calculated. Since this rate was below 0.10, it was accepted that it showed sufficient consistency (Kuruüzüm and Atsan, 2001). As a result of the AHP, it was determined which criteria had more weight under which alternative and groups were formed.

Table 1. Fundamental scale of Saaty.

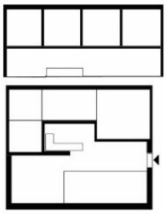
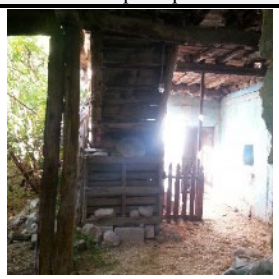
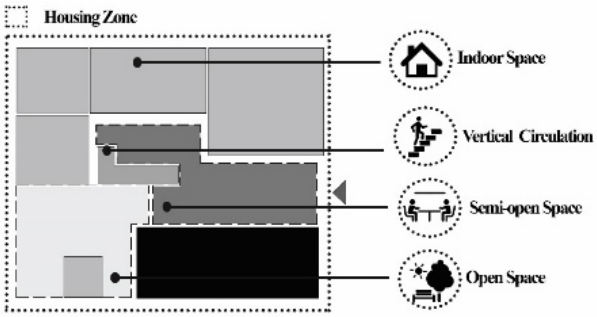
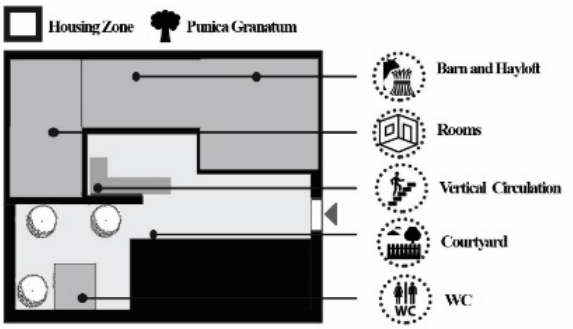
Intensity of importance	Definition1
1	Equal importance
3	Moderate importance
5	Strong importance
7	Very strong importance
9	Extreme importance

5.0. Findings
5.1. Findings on the field studies carried out

Within the scope of the study method, Isparta/Islamköy was visited for field studies. Drawings and measurements were obtained in about 10 days of work. Following that, 5 second-degree registered traditional residences containing the courtyard space were examined with "spatial quality parameters". 5 registered traditional residences on Okul Street have been examined with the following graphical schemes. These are; Hüseyin TUNCEL, Zübeyde ATILGAN, Sevim ATILGAN, Ahmet Salim ÜSTÜN-Rafet ÜSTÜN and Emine İSTANBUL Housing.

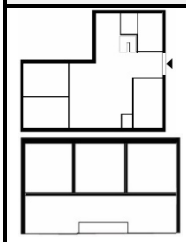
House 1, which belongs to Table 2, has a plan type with 4 rooms and an outer hall belonging to Hüseyin TUNCEL. In terms of open-semi-open space organization; "patio" is accepted as a semi-open space, the rooms of the house are described as closed spaces, and the other areas outside the residential area are described as open spaces. Life begins with the entrance. There is a restroom in the open area of the residence. There are also herbal elements in the open space with pomegranate trees.

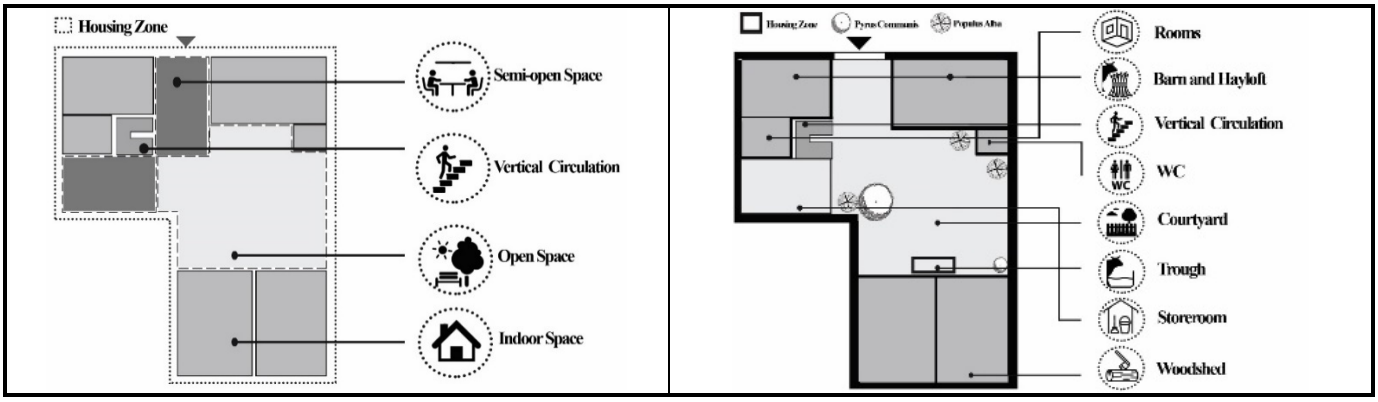
Table 2 Courtyard Features of Residence 1

Ground Floor and First Floor	Facade Photo	Courtyard Photo	Open - Semi Public Space photo
			
Courtyard Plan Lejand		Plan Lejand	
			

The house in Table 3 has a three-room plan type with outer hall owned by Zübeyde ATILGAN. Life begins with the entrance. There is a restroom, trough, woodshed, and storage in the open area of the house. There are also herbal elements in the open space where pear and poplar trees are located.

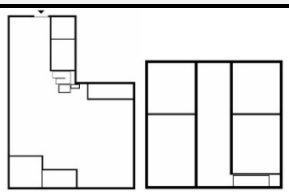
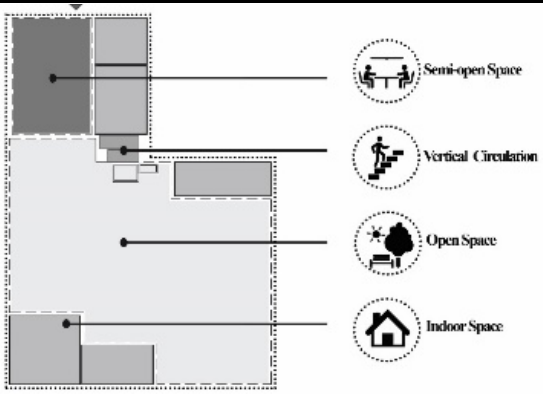
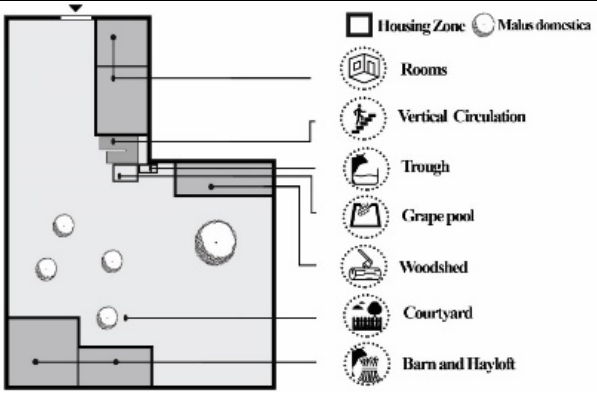
Table 3 Courtyard Features of Residence 2

Ground Floor and First Floor	Facade Photo	Courtyard Photo	Open - Semi Public Space photo
			
Courtyard Plan Lejand		Plan Lejand	



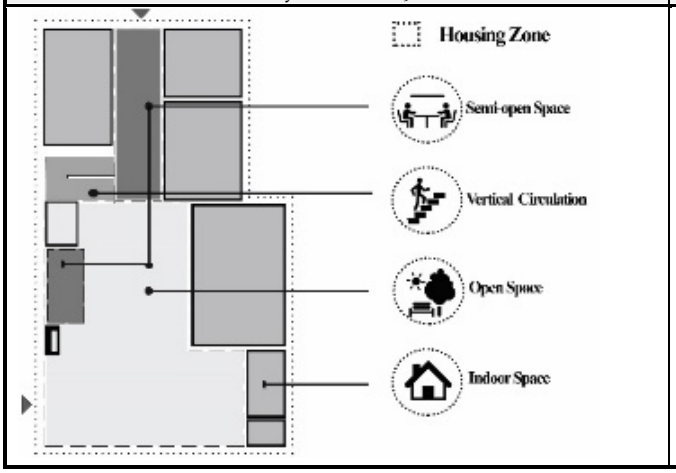
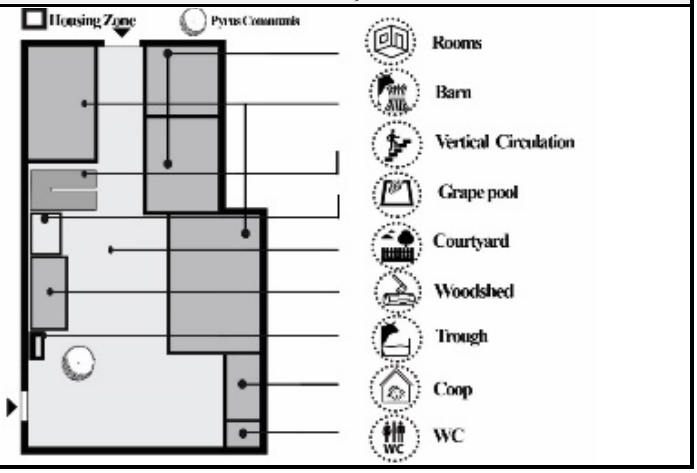
The house in Table 4 has a plan type with an inner hall owned by Sevim ATILGAN. Life begins with the entrance. In the open space of the house, there is a trough, woodshed, grape-molasses pool and woodshed. There are also herbal elements in the open space with apple trees.

Table 4 Courtyard Features of Residence 4

Ground Floor and First Floor	Facade Photo	Courtyard Photo	Open - Semi Public Space photo
			
Courtyard Plan Lejand		Plan Lejand	
			

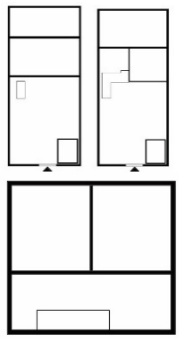
The house in Table 5 has a plan type with an inner hall owned by Ahmet Salim ÜSTÜN-Rafet ÜSTÜN. Life begins with the entrance. In the open area of the house, there is a trough, poultry house, grape-molasses pool and restroom. There are also herbal elements in the open space with pear trees.

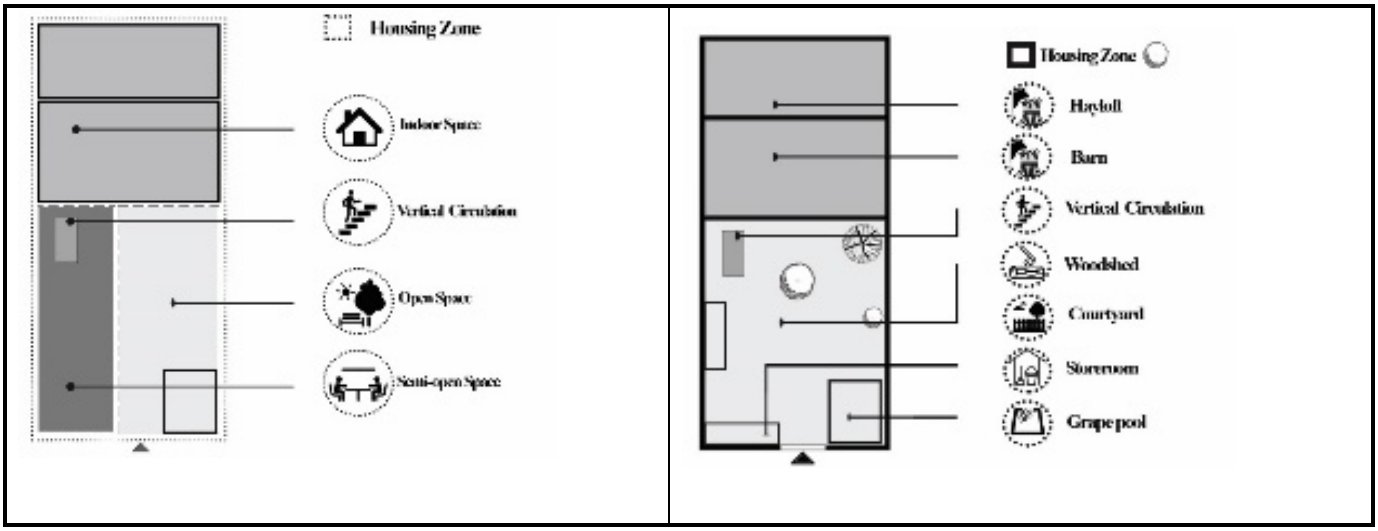
Table 5 Courtyard Features of Residence 4

Ground Floor and First Floor	Facade Photo	Courtyard Photo	Open - Semi Public Space photo
			
Courtyard Plan Lejand		Plan Lejand	
			

The house in Table 6 has a plan type with two rooms and an outer hall owned by Emine ISTANBUL. The open space of the courtyard begins with the entrance. There is a grape-molasses pool, warehouse and woodshed in the open area of the house. There are also herbal elements in the open space with pomegranate and poplar trees.

Table 6 Courtyard Features of Residence 5

Ground Floor and First Floor	Facade Photo	Courtyard Photo	Open - Semi Public Space photo
			
Courtyard Plan Lejand		Plan Lejand	



5.2. Findings on the AHP Method

The AHP method matrix is constructed with 3 alternatives in total and 12 sub-parameters that make up these alternatives. In total, 12 relative comparison matrixes were created for each parameter. Relative matrixes were calculated according to 12 sub-criteria (social comfort, socializing, usage diversity, ease of use, historical value, identity effect, sense of belonging, originality effect, closeness to nature, refreshment effect, relationship with plant, climatic comfort) (Table 7, Table 8). After that, the data were normalized and the result of the normalized matrix was obtained (Table 9).

Table 7 Matrix of Comparisons by Social Quality (SQ)

C1.Social comfort	Social quality (Sq)	Cultural quality (Cq)	Ecologial quality (Eq)
Social quality (Sq)	1	9	0,111
Cultural quality (Cq)	0,111	1	7
Ecologial quality (Eq)	9	0,143	1
Total	10,111	10,143	8,111
C2.Socializing	Social quality (Sq)	Cultural quality (Cq)	Ecologial quality (Eq)
Social quality (Sq)	1	9	0,111
Cultural quality (Cq)	0,111	1	7
Ecologial quality (Eq)	9	0,143	1
Total	10,111	10,143	8,111
C3.Usage diversity	Social quality (Sq)	Cultural quality (Cq)	Ecologial quality (Eq)
Social quality (Sq)	1	9	9
Cultural quality (Cq)	0,111	1	7
Ecologial quality (Eq)	0,111	0,143	1
Total	1,222	10,143	17
C4.Ease of use	Social quality (Sq)	Cultural quality (Cq)	Ecologial quality (Eq)
Social quality (Sq)	1	9	9
Cultural quality (Cq)	0,111	1	7
Ecologial quality (Eq)	0,111	0,143	1
Total	1,222	10,143	17

Table 8 Matrix of Comparisons by Cultural Quality (Cq)

C5.Historical value	Social quality (Sq)	Cultural quality (Cq)	Ecologial quality (Eq)
Social quality (Sq)	1	5	9
Cultural quality (Cq)	0,2	1	9
Ecologial quality (Eq)	0,111	0,111	1
Total	1,311	6,111	19
C6.Identitiy effect	Social quality (Sq)	Cultural quality (Cq)	Ecologial quality (Eq)
Social quality (Sq)	1	0,140	0,140
Cultural quality (Cq)	7	1	9
Ecologial quality (Eq)	7	0,110	1
Total	15	1,250	10,140
C7.Sense of belonding	Social quality (Sq)	Cultural quality (Cq)	Ecologial quality (Eq)
Social quality (Sq)	1	7	0,2
Cultural quality (Cq)	0,140	1	9
Ecologial quality (Eq)	5	0,110	1
Total	6,140	8,110	10,200
C8.Originality effect	Social quality (Sq)	Cultural quality (Cq)	Ecologial quality (Eq)
Social quality (Sq)	1,0	5	0,110
Cultural quality (Cq)	0,200	1	9
Ecologial quality (Eq)	9	0,110	1
Total	10,200	6,110	10,110

Table 9 Matrix of Comparisons by Ecological quality (Eq)

C9.Closeness to nature	Social quality (Sq)	Cultural quality (Cq)	Ecologial quality (Eq)
Social quality (Sq)	1	7	7
Cultural quality (Cq)	0,140	1	5
Ecologial quality (Eq)	0,140	0,2	1
Total	1,280	8,2	13
C10.Refreshment effect	Social quality (Sq)	Cultural quality (Cq)	Ecologial quality (Eq)
Social quality (Sq)	1	5	3
Cultural quality (Cq)	0,2	1	3
Ecologial quality (Eq)	0,330	0,330	1
Total	1,530	6,330	7
C11.Relationship with plant	Social quality (Sq)	Cultural quality (Cq)	Ecologial quality (Eq)
Social quality (Sq)	1	9	9
Cultural quality (Cq)	0,110	1	7
Ecologial quality (Eq)	0,110	0,140	1
Total	1,220	10,140	17,000
C12.Climatic konfor	Social quality (Sq)	Cultural quality (Cq)	Ecologial quality (Eq)
Social quality (Sq)	1	7	3
Cultural quality (Cq)	0,140	1	3
Ecologial quality (Eq)	0,330	0,330	1
Total	1,470	8,330	7

After the normalized matrix results, the result table in Figure 8 was obtained. Comparative matrix results of the alternatives were obtained according to 12 criteria. In this, as in the other steps, a matrix was created using the values in the standard preference table (Table 10). When we look at the final results obtained with the AHP method, social quality (.510-52%) has the highest weight, followed by cultural quality (.260 - 26%) and ecological quality (.230 - 23%). When we reach this result, we can say that "traditional dwellings with courtyard feature increase the social quality.

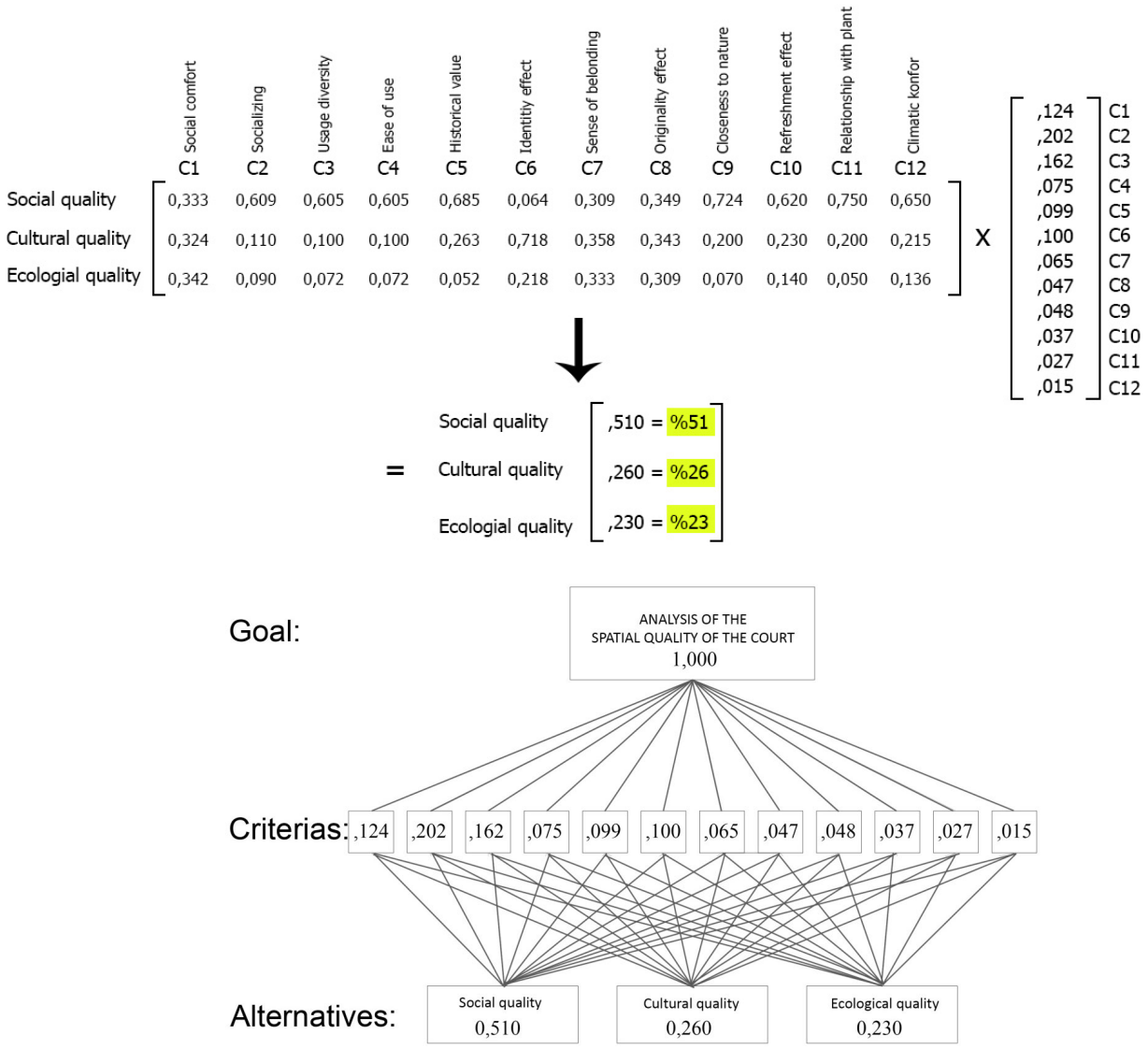


Figure 8 Comparative matrix results

6 Results and Discussion

In this article, a framework and methodology based on blurry logic is presented to evaluate the spatial quality parameters of traditional houses with courtyard characteristics, which are created by literature studies. In this context, 5 second-degree registered traditional dwellings with courtyard space were examined.

The results obtained within the scope of the study are grouped under two titles as "results obtained as a result of field and observation studies" and "results obtained as a result of the AHP method". The grouped results can be listed as follows:

Results obtained as a result of field and observation studies:

- Islamköy is a very important area with its cultural, historical and touristic values. The traditional dwellings among the various registered buildings in the village constitute the most unique texture of the area. Considering the courtyard character examined in the subject of traditional residences; it is possible to come across a courtyard in almost every residence.
- Just like in the Turkish dwelling, in the traditional dwellings of Islamköy, there is a courtyard that reflects the sociological and cultural structure of the region, but offers limited concrete clues about the lifestyle. Because there are no permanent landlords living in the houses.
- As a result of the observation and photographing studies of the 5 registered traditional dwellings, the sociological and cultural structure were seen and clues about the lifestyle were obtained.
- The dwellings have borders built with high walls for privacy reasons. The entrance to the courtyard is made through the door on this wall. The doors are double-winged to provide convenience for the courtyard and daily work. Entrance begins with patio.
- There are various spatial units and elements in the open space classified as open, semi-open and closed space that was discussed. The trough, molasses pool, sitting units and areas

where daily work is done reflect the lifestyle. There are also fruit trees in the open area.

- The semi-open space creates patio. Patio is one of the main venues seen in many regions in Turkey, and it has emerged as an area where the circulation is intense and where family actions take place.
- Among the indoor spaces; barn and hayloft. The presence of the barn and the hayloft shows the socioeconomic orientation of the region. They are places that have emerged out of necessity in the region where cattle breeding is common. Apart from this, there are also closed areas such as warehouse, depot and woodshed.

The findings obtained as a result of the AHP method:

- There are lots of studies have been carried out on traditional houses and courtyards. Despite the studies, the values that the courtyard character adds to the space are complex. The AHP method was used within the scope of the study as it became quite complex to comment and decide on the subject.
- As a result of the literature studies, 4 main criteria and 12 sub-criteria were created.
- In the ranking made relative to the criteria, it was seen that the most weighted criterion was the "social quality (.510)" alternative and the 4 criteria that formed it (social comfort, socializing, usage diversity, ease of use).
- In the weighting among the criteria, the second place was the "cultural quality (.260)" alternative and the 4 criteria (historical value, identity effect, sense of belonging, originality effect) were obtained.
- In the criterion weighting of the AHP stage, the third place is the “ecological quality (.230)” alternative and the result of 4 criteria (closeness to nature, refreshment effect, relationship with plant, climatic comfort) that make up it.
- Besides, it was stated that the results obtained in the study were consistent and appropriate.
- Socializing (.202)” has the highest weight and “ease of use (.075)” criterion has the lowest weight in social quality parameters.
- Among the cultural quality parameters, “Historical value (.99)” has the highest weight and “originality effect (.047)” criterion has the lowest weight.
- Among the ecological quality alternatives, the "Closeness to nature (.048)" criterion has the highest weight and the lowest weight is the "climatic comfort (.015)" value.
- When we examine the results, it is possible to say that the most important quality alternative that represents the courtyard character for users is the "socialization parameter”.

In the light of the results and findings obtained within the scope of the study, the following suggestions can be made;

- The courtyard, which is an important place of the urban structure and housing unit; since it contains ecological, socio-cultural and socio-economic values, it should be given sufficient importance and planned in line with the needs of the region where it is located.
- Parameters should be considered in the modern and contemporary designs of the courtyard in traditional dwellings, which are the subject of various disciplines such as architecture, interior architecture and landscape architecture.
- Each parameter used within the scope of the study has a special value and character for the courtyard. But when we look at the weighting between them; it can be said that while planning traditional courtyard characters, more attention should be paid to “socializing” and the criteria that make it up, and this parameter should be given special attention while making planning decisions. At the same time, the data obtained from the study is a base for future studies.

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