Traditional houses in Ürgüp/Ayvalı rural heritage area: Vernacular architecture, spirit of place and local identity

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Abstract
Within the scope of the plans made for the protection of rural architectural heritage areas, especially the concepts of vernacular architecture, spirit of the place and local identity should be carefully considered. As a result of interventions made without considering these concepts, it is possible to lose the local identity and the spirit of the settlement area in heritage areas. There are many declarations prepared by international institutions and organizations on this subject. In particular, the studies carried out by ICOMOS on this subject include important determinations that should find their counterparts not only in international platforms but also in national legislation. This study aims to determine the local identity components specific to the settlements that can be defined as rural architectural heritage areas through the definitions of vernacular architecture and spirit of the place defined by ICOMOS and to integrate these three concepts. For this purpose, Ayvalı village in the Cappadocia Region, which is on the World Cultural Heritage List, was selected as the sample research area. The fact that Ayvalı is a rural settlement area where the natural and built environment can be observed together, its ability to carry examples of construction traditions from different periods to the present day without deterioration and the rapid change and transformation capacity of the region are the main reasons for considering this settlement. In this context, firstly the general settlement characteristics and structural character in the area were determined, typology studies were carried out and eight components defining the local identity were defined. These components were compared and matched with ICOMOS's vernacular architecture and spirit of place indicators. Thus, it is aimed that the determined components have high value at national and international levels and that these components can be used as local identity indicators in different rural settlements.

1. Introduction

The shaping of a region's settlement pattern is closely related to its topographic and geological structure. The construction tradition, which is shaped by human hands and enriched with different functions, combines with the layered and multicultural extensions of the local lifestyle and gives meaning to the elements of local identity. In Cappadocia, one of the regions where this process can be observed intensively, a unique understanding of local identity has been shaped by processing natural formations and materials specific to the region with the influence of the civilizations it has hosted in the historical process. The reflection of different periods and cultures on both religious buildings and residences, and especially with the effect of material and topographical shaping, a common architectural language, which can also be called Cappadocian architecture, has been formed

throughout the region. However, it is observed that this architectural language has diversified or differentiated especially in rural architectural heritage areas due to social, cultural and economic reasons.

In the settlements that constitute the local architecture in Cappadocia, the main components of this architectural language are rock-carved spaces and buildings shaped with stone materials. Spatial and cultural meaning is perceived holistically through these components. The fact that the tuff formed by the geological structure of the region, which has been preferred as a living space for millennia with the effect of these components, is an easy-to-process material, has enabled the growth of rock-carved spaces at different levels horizontally and vertically. Local stones were also preferred in masonry buildings with the advantage of hardening and increasing strength of tuff after processing [1-3]. In addition to meeting the need for

housing, these rocky areas also enabled the construction of religious buildings or the creation of underground cities used for defence [4]. The possibilities of technology and materials have defined spatial and functional meaning and created local identity. Ürgüp district is one of the central settlements of the Cappadocia Region, which has been included in the UNESCO World Cultural Heritage List since 1985 due to these features. Ayvalı village, which is addressed within the scope of the study, is located 12 km. southeast of Ürgüp. It borders Mustafapasa (Sinasos) to the north, Mazı to the south, Cemil Village to the east and Bahçeli Village to the west. The archaeological remains, rock-carved places, underground city and churches in Ayvalı, which reflects the architectural and geographical characteristics of the region as a rural architectural heritage site, show that this village is one of the oldest settlements in the region.

In recent years, cultural tourism has been considered as the main way to preserve the buildings in our country, especially in rural areas. The ability of cultural heritage to attract as many visitors as possible has been recognized by local administrators and users as the main way to preserve and generate income. The intense interest accelerates the processes of wear and deterioration, especially in archaeological sites such as rock-carved sites [5]. The traditional residential architecture in Ayvalı also bears the characteristics of the Cappadocia region, and consists of buildings shaped by rock carving; rock carving + masonry and masonry construction techniques. The first settlement area around the valley and the traditional houses have been largely abandoned, and recently, tourism-oriented uses such as hotels and restaurants have become widespread in the village. Due to these transformations, as in many rural architectural heritage sites, the buildings and traditional pattern in Ayvalı are in danger of losing their original characteristics. This change in the function of the buildings, which have been changed due to abandonment or wear and tear, and therefore their spatial meaning is often damaged, leads to the transformation of the local identity.

With this study, it is aimed to document the village houses, which are important determinants of the historical pattern of Ayvalı, as rural architectural heritage values, to identify the unique features and local identity indicators of the settlement and to draw attention to the protection of these features in the ongoing transformations for tourism purposes. In this context, it is aimed to discuss the concepts of "Vernacular Architecture" and "Spirit of Place", which establish important connections with rural architectural heritage, and to define the components of "Local Identity" by developing a new framework of meaning for Ayvalı through the indicators determined by ICOMOS.

1.1. Conceptual framework

Identity is the distinguishable character or property of a person or object [6]. The definition of self-image and identity includes the dimensions of place and space, and the totality of these dimensions constitutes place identity [7]. Local identity can be defined when the settlement has a soul and reflects it, together with a social structure with unique qualities [8]. The concepts of 'Locus Solus', unique place, are important concepts that are still used today to understand cities, place and geography, earth and sky, and early exemplary values [9]. Although the concept of place identity has been developed by various researchers [7, 10, 11] since the 1970s, these studies have generally focused on form, and the related determinants have been explained mostly in relation to the visual/aesthetic characteristics of settlements [12]. However, local identity is formed not only by distinguishable and memorable formal features, but also by the meaning that individuals attach to the city. There is no doubt that the phenomenon of identification with place, which requires a very long process, depends on the social environment and its components as well as the physical dimensions of the place [12-16]. Senosiain stated that vernacular architecture emerged with architecture without architects and took shape with local methods, techniques and materials [17].

ICOMOS has limited the characteristics of vernacular architecture with some definitions in 1999 through its studies and meetings. These are:

-V1: A manner of building shared by the community,

-V2: A recognizable local or regional character responsive to the environment,

-V3: Coherence of style, form and appearance, or the use of traditionally established building types,

-V4: Traditional expertise in design and construction which is transmitted informally,

-V5: An effective response to functional, social and environmental constraints,

-V6: The effective application of traditional construction systems and crafts as vernacular architecture [18]. These features defined by ICOMOS for vernacular architecture constitute the first comparison group of the components to be identified for Ayvalı within the scope of the study.

In the ICOMOS Québec Declaration [19], with the concept of "Spirit of Place", the previously defined components of local cultural identity are developed and the necessity of protecting all the material and immaterial elements that give meaning, value, emotion and mystery to the place is revealed. In this context, it was accepted that the combination of tangible qualities such as buildings, sites, landscapes, routes, objects and intangible qualities such as memories, narratives, written documents, ceremonies, festivals, traditional knowledge, values, textures, colors, traces, etc. that constitute local identity define the spirit of the place and at the same time local identity. In the Foz do Iguaçu Declaration published by ICOMOS in Brazil in the same year, this issue was elaborated and the components that determine the spirit of place were determined as follows.

-S1: Characteristics of the geographical and natural environment

-S2: Natural heritage that is sacred through the meanings attributed by societies

-S3: The way the relationship between communities and the natural environment has evolved over time and is expressed in cultural landscapes, cities, urban and rural areas

-S4: Places of human ownership, such as urban and rural open spaces, scenes and spiritual manifestations of social life

-S5: Built spaces that express a particular way of solving needs for the development of human life

-S6: Material components that influence the specific identity of urban spaces such as pavements, forestry, signage, lighting and urban furniture

-S7: Various functions and professions that have developed over time in the spaces constructed by human beings

-S8: Social processes evident in the production and reproduction of cultural objects

-S9: Successive contributions from different cultures that characterize the settlement [20]. These characteristics, developed by ICOMOS and defining the spirit of place, constitute the second comparison group of the components to be identified for Ayvalı within the scope of the study.

According to the Foz do Iguaçu Declaration, a place is not just a space, but a place with a singular identity. From this perspective, the spirit of a place is a vital breath of life that reflects the identity of a particular culture as a result of its relationship with the place [20]. The interaction of place and spirit and the effects of one on the shaping of the other reveal the cultural identity of historic sites. In this framework, "identity" defines the meaning of place. This meaning includes natural, material and spiritual assets. Local identity can be defined differently by different groups and individuals and can change over time. It is plural and dynamic. Defining the cultural identity of a place should involve all users who attach meaning to the place, such as property owners, experts and managers. Accordingly, place identity can have different definitions and characters depending on the attributions of different groups and actors. In this context, place identity in historic environments draws a dynamic and broad framework, depending on the variable and non-variable character of historic buildings and sites [21].

Cultural and spatial meaning are among the important components that determine the identity of a place and emphasize local identity. The semantic meaning of buildings and places is related to the social and cultural messages of architecture. But architecture does not only emphasize meaning. It also participates in the construction of meaning through the organization of spaces and social relations. The relationship between the conceptual and the perceptual has been discussed, especially in the second half of the twentieth century, as part of two strong and interrelated oppositions. One of these is form and function and the other is form and meaning [22-24]. In traditional architecture, one of the building types where this relationship can be observed most clearly is the dwelling. The spatial meaning shaped by the socio-cultural structure of the society to which the houses belong and the environmental factors of the region have influenced the form by integrating with the function.

It can be said that traditional housing, "*the framework of which has not yet been drawn precisely*" [25], is a product of geographical data and the materials and construction techniques that emerge based on these data, and the lifestyles that emerge as a result of the cultural change and development of the society. According to Rapoport, there are 12 basic cultural elements that affect housing formation. These are religion, language, family structure, child-rearing methods, settlement patterns, land ownership systems, eating habits, symbolic and traditional systems, social identity, cognitive maps (privacy, density, territoriality), behavioural organization and work/trade/cooperation habits [26].

Experts working on the concept of traditional housing generally define Turkey by dividing it into regions. The definitions of the Cappadocia Region, which has an important place in Anatolian traditional housing architecture, differ according to the regional distinctions made. According to Sezgin, Turkey is divided into two main regions in terms of the distribution of traditional houses. The region called "Anatolian Synthesis" covers the Western Black Sea, Marmara, Central Aegean and Central Western Anatolia, and the houses in this region fully reflect the image of traditional housing. The second region, the "Transition Region", located on the periphery of the synthesis region, could not create their own synthesis under the pressure of the surrounding cultures. In this sense, the Cappadocia region is located in the transition zone with the example of Kayseri [25]. Kuban, on the other hand, defined the distribution of traditional houses through regional differences by dividing Turkey into seven regions. According to Kuban, the Cappadocia region is far from its well-known definition and is located in the region with stone architectural features that meet with Northern Syria. [27]. According to Küçükerman, who finds it appropriate to define Anatolian residential architecture by dividing it into three regions, Cappadocia is located in the "Mixture Zone" between the outer and inner regions and under the influence of both regions [28]. Asatekin categorizes traditional houses in three groups according to the placement of the sofa, regions and building materials and techniques. [29]. The houses in Cappadocia stand out in this classification especially with their construction techniques shaped by stone materials and rock-carved spaces. Within the traditional housing typology [30], which Eldem classifies according to the position of the sofa within the dwelling, it is seen that there is a rich sofa typology in the Cappadocia Region. Due to the geological structure enabling the formation of different housing types; houses with various interpretations of the plan types of exterior sofas, sofas without sofas, interior sofas and centre sofas appear in different settlements of the region.

Önür and Özkan think that David Greene's "*Spray Plastic House*" project is being applied in certain regions of the world; they cite the Cappadocia Region in Turkey as an example and define this process as creating space by carving a space in an unformed mass. It is known that this design approach is applied in cave settlements in many parts of the world. In the Cappadocia Region, rock-carved spaces have been created with this method for centuries [31, 32]. Especially the natural sheltered places in the region and the presence of the Kızılırmak River have played an important role in the development of the region as a living space. These qualities caused the

settlements established in the region to assume the roles of production, administration, education, trade, kingdom, bishopric, metropolitanate, and sovereign city within their own periods and the borders they dominated, and these identities have continued their traces to the present day, albeit partially [2, 33]. On the slopes of the valleys, rock-carved spaces were developed in horizontal and vertical directions at different levels underground, enabling activities such as protection and seclusion in addition to shelter [34]. The housing typology defined by Binan for the houses that play an important role in this construction tradition and classified under three main headings as rock carving, rock carving + masonry and masonry is a classification that is valid throughout the region [1]. Kayseri houses in the Cappadocia region have a similar typology [35]. The housing typology in the Cappadocia Region started with the tradition of creating spaces by carving the rock mass and diversified with the change of factors such as technology and behavioural habits. The combination of open-ended rock-carved spaces with masonry buildings added in front of them was the second stage of the change process, and the masonry construction tradition, which became widespread in the 19th century, became the last representatives of this tradition. These features, which constitute the local identity of the region, have gained a meaning that reflects the concept of cultural landscape through the blending of culture, technological possibilities and geographical features.

Cultural landscapes, one of the current components in the field of conservation, are defined as places resulting from "human-nature interaction". In the 16th Session Report of the World Heritage Committee Conference held in Sante Fe in 1992, the concept of cultural landscape was discussed. With reference to Article 1 of the UNESCO World Heritage Convention [36], which also mentions human-nature interaction, the criteria for inscription were updated to include cultural landscapes of outstanding universal value [37, 38]. The Council of Europe's "Recommendation on the Integrated Protection of Cultural Landscapes" [39] and the "European Landscape Convention" [40] are documents that define the concept of cultural landscapes and develop strategies for their protection. When these definitions are examined, the Ayvalı houses, which offer a visual richness by integrating with the valley and rocks, also meet the concept of cultural landscape.

2. Method

Within the scope of the methodology of the study, firstly, the conceptual framework of the study was created by conducting literature research within the scope of architecture / meaning / function / local identity / traditional housing. In the second stage, a preliminary examination was carried out in different settlements in order to determine a sample area that can holistically meet the concepts researched within this framework. It was decided to study Cappadocia, a region rich in traditional architecture, natural and built environment and history of civilizations in Turkey. The fact that the Cappadocia Region is included in the UNESCO World Cultural Heritage List, the dangerous effects of the

rapidly spreading tourism activities in the region make it compulsory to document the original features in the region, the fact that Ayvalı is a settlement that preserves the original features of the traditional settlement texture and the fact that there has not been a study in this area before has enabled Ayvalı to be determined as a sample study area. In order to obtain the findings that will form the basis for the typology studies carried out within the scope of the study, the case study method, one of the qualitative research types, was preferred [41-43]. In this context, architectural documentation data, visualization materials and observations were used together. With the thematic analysis approach [44, 45] used within the scope of the research, mechanisms for identifying, analysing and reporting the themes within the research data were created. Within the scope of the typology study, the authenticity criterion and the representation of the characteristics of the settlement were prioritized in the houses examined, and 17 houses in the valley that have not been repaired or intervened before, mostly abandoned and bearing the spatial and structural characteristics of the 19th century, the period when they were first built, were examined. While carrying out this examination, it was aimed to identify the vernacular architecture and spirit of place components defined by ICOMOS in the 1999 and 2008 declarations, and for this reason, the massing and texture features that constitute the visual perception of vernacular architecture were mainly focused on. Then, the traditional pattern of the region was evaluated and its effects on the relationship between local identity and meaning were analysed.

3. Traditional Pattern in Ayvalı

The history of the village dates back to prehistoric times. In the archaeological researches, it was determined that a road in the village was used in the prehistoric period, Assyrian Period ceramic remains in different parts of the village, bronze cast furnace from the Hittite Period, underground city and Roman tombs. About 100 meters south of Hacı İsmail River Bridge, there are frescoed rock-carved churches from the Byzantine period. In the valley, rock-carved dovecotes, fairy chimneys and rock tombs attract attention. The name of the village, which was also used in the Seljuk and Ottoman Periods, is mentioned as Aravani in 1476 records and Aravan in 1927 records. The non-Muslims living in the village left the village with the exchange and migration and were replaced by families of Turkish and Turkmen origin [46, 47]. Considering its natural beauties and the susceptibility of the villagers to tourism, the village was declared a model village by the Ministry of Tourism in 2002, and landscaping, repair, restoration and re-functioning works have started in the village and these transformations continue today.

3.1. Ayvalı village settlement features

The settlement pattern of Ayvalı is generally characteristic of the region. The rock structure of the region, which allows for horizontal and vertical growth, also manifests itself in Ayvalı, and the houses built in harmony with the natural environment reflect the

characteristic features of the region. The historical houses, built with stone material and masonry construction technique by integrating with the rock-carved spaces, give an image as if they are on top of each other along the slopes. This settlement, which has an extremely contiguous and dense texture, reveals a harmonious integrity with the natural environment [48].

The oldest settlement in Ayvalı is located on the valley slope. Although this valley, around which the first

settlement area of the village was formed, does not have a registered name, it is known as "İçeri Dereler Valley" among the village people (Fig. 1). The houses built on the slopes of this valley form an organic texture according to the topography in the form of rock-carved buildings, masonry buildings attached to rock-carved buildings or masonry buildings.

Figure 1. Panoramic photo of the Valley of İçeri Dereler

The traditional housing group, which was built in the village in 1950 and afterwards and also has rock-carved spaces, is located around the street formed parallel to the valley. Since these buildings are located on a less sloping land compared to the valley region, the rock-carved spaces on the ground floors of the houses are more suitable for horizontal growth.

The declaration of the village as a disaster area in 1980 and the inability of the houses forming the traditional texture to meet today's living standards and conservation problems have caused the settlement areas of the village to shift to other areas. Field studies conducted in the village revealed that there are two separate regions with houses built on flat land, far from traditional materials and texture. The area where the public areas of the village such as the health centre and school are located is the first area where the new settlement has developed. The other area with new construction with a reinforced concrete type project was created near the Ürgüp road.

Ayvalı, a small village, is not defined as a neighborhood. However, the valley area where the old settlement is evident is known as "Gamirasu District", "Dereler Neighbourhood" or "Lower Neighbourhood" because of the Gamirasu Hotel located there (Fig. 2, 3).

Figure 2, 3. Gamirasu Hotel and Ayvalı Church inside

The area on the Ürgüp road, which is dominated by new zoning, is called "Lilli" by the villagers, and the area where there are public spaces such as the village school and the village cemetery and other new houses is called "Harım". The valley region, where the historical pattern is intensely felt, is the region where tourism is the most vibrant, where hotels are located, but the village people are not seen much due to the unprotected and abandoned buildings, and mostly local and foreign tourists. It is also the area where the traditional pattern is felt, the street just behind the valley road and the buildings around it, the multi-purpose hall at the entrance of the village, the village bakery, two village coffees, the grocery store and the village mukhtar's office are located. This area can be defined as the village centre as it is the most intensively used area by the locals. The neighbourhood, known as "Harım" among the locals, has a topographically flatter terrain and is the area where detached houses built completely different from the traditional pattern and public spaces such as cemetery, health centre and village school are located (Fig. 4).
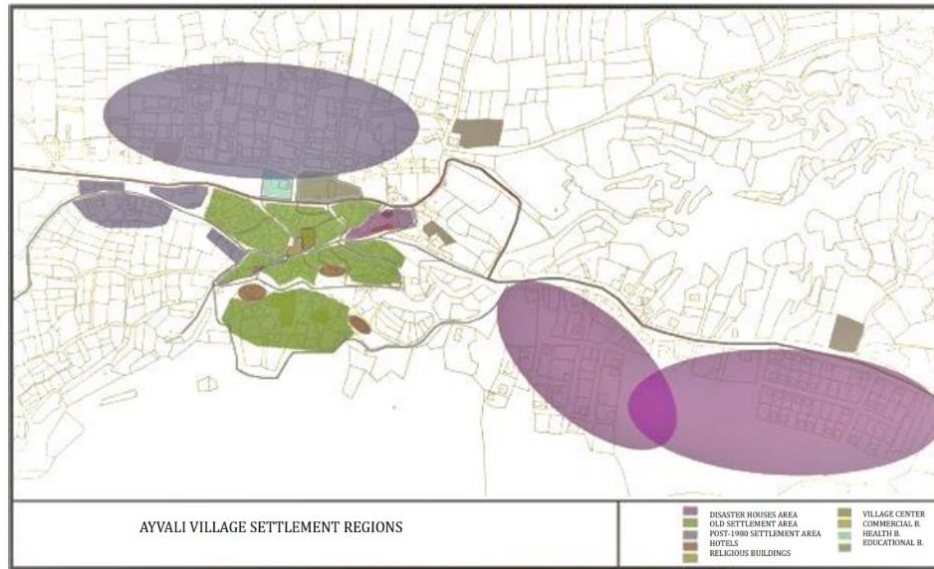
Figure 4. Ayvalı village settlement regions

The main access to Ayvalı is via the Ürgüp road. The residential area visible from the Ürgüp road before reaching the village center consists of new buildings constructed after the village was declared a disaster area. The Ürgüp road passes through the middle of the old residential area near the village center and divides the area into two. The other residential area of the village, known as "Harım" by the villagers, where there are mostly new buildings and public units, is also separated from the village by an extension of the Ürgüp road. Although the other streets and roads that provide transportation within the village do not have a known name, they are defined as "Ayvalı Village Road" (Fig. 5).

Figure 5. Village transportation and buildings in Ayvalı

In the village, there are densely clustered and contiguous groups of houses and streets that go around these groups and intersect with each other. Except for the valley area, the boundaries of the other streets in the village are formed by the facades or garden walls of the houses built in contiguous order. In areas where the slope is high, the houses are positioned on top of each other at different elevations, and it is seen that they sit on the land without affecting each other's field of vision by using the advantage of the elevation difference. In areas where houses are clustered, there is either a common courtyard or very narrow sloping streets that provide passage.

It is possible to see the organic formation and perceive the atmosphere that can be defined as the soul of the place, especially in the streets within the village between groups of houses (Fig. 6, 7). The narrow streets, which are shaped according to the way the buildings use the land, are limited by the house and courtyard facades. (Fig. 8) The houses, which were abandoned due to the migration process that started in the previous years and accelerated after the village was declared a disaster area, have accelerated their wear and tear processes due to the fact that they remain empty, but it has been possible to preserve their original architecture since their planning has not been interfered with additions. This situation is also reflected in the streets within the village, which are bounded by house and courtyard facades, and the street formation has preserved its originality. Although there are some houses that have been interfered with due to the fact that they are still in use, the empty houses and streets are identifiable with their spatial constructions, construction features, material types and mass boundaries that integrate with the land, despite the damages they have received.

Figure 6, 7. Ayvalı streets

Figure 8. 35x50 watercolour painting (Ağbaba, 2019)

The streets around the clusters of houses are paved with new cobblestones. While some of the streets that provide transportation between historical buildings are paved with original stone, most of them are dirt. The area known as the "Harım" Neighbourhood, where public buildings such as a health centre, school and cemetery are located, is separated from the village by the Ürgüp road and this road is covered with asphalt.

In the "Harım" area and along the Ürgüp road, which are two separate areas where new building areas have developed, there are house groups that are far from the traditional pattern, consisting of regular parcels and built with modern materials. The streets in these areas have emerged according to a planned geometric form and parcelization. The Yusuf Bey Mosque, a Seljuk building, stands out as a monumental building for the small village of Ayvalı due to its historical value, location, stylistic difference, building height and the fact that it was able to create a small square around it. The Ayvalı Church, located in the Gamirasu Hotel, which plays an important role in the tourism activities of the village and even the district of Ürgüp, is also an important reference point (Fig. 3).

3.2. Traditional Ayvalı houses

Although traditional Ayvalı houses are considered within the scope of "transitional housing" according to Sezgin's definition [25], they are within the borders of Nevşehir region, which has created its own characteristic architecture with its rock-carved structures and fairy chimneys, and carry the characteristics of the province and district to which it is connected. Therefore, it has a defined image. In addition, it is clear that a traditional architecture belonging to Ayvalı Village can be mentioned due to the use of natural and naturally produced materials, which are listed by Sezgin as the requirements for the formation of local architecture, the use of natural and naturally produced materials, being shaped according to the nature and climatic conditions in which it is located, the development of architectural products as a continuation of the natural landscape, that is, in a way that respects the elements of nature, the construction system and technique being easily understandable, and an aesthetic understanding that

develops from generation to generation can be seen in the facade systems and decorations.

The development process of civil architecture in Ayvalı Village starts with the rock-carved housing tradition and ends with the masonry housing tradition, as in the Cappadocia Region. Living units consisting of rock-carved spaces that developed horizontally and vertically in accordance with the topography were first formed on the valley slope, developed with masonry spaces added to these spaces over time, and finally the masonry building tradition was adopted.

Although traditional houses in the same region are created by being influenced by the same natural environment and local material properties, they may show some differences in terms of plan features [49]. In this context, although the traditional houses of Ayvalı show important similarities with the traditional architecture of Cappadocia in terms of construction system, building elements and material types, they have differences in terms of plan and façade decorations. Although it is not the only factor, it is observed that especially economic opportunities are effective in the shaping of the buildings in the village. In his study on the history of Ürgüp, Elmacı states for Ayvalı, "*The village is a community of middling families. There are almost no families that can be called rich, and there are very few poor families*" [47] shows that there are no serious economic differences between the families in the village. The fact that the houses are generally small and consist of a small number of units and that the façade features are not very rich coincides with the modest living conditions and material possibilities of the village people.

4. Traditional Building Composition and Natural Environment Relationship in Ayvalı Traditional Pattern

The building composition of the buildings is formed by the number of storeys and height, the type of material used, its color texture, variety, the proportions and forms of the spaces on the facade surfaces, the facade elements used (floor moulding, ornamentation, etc.), facade movements due to the adaptation of the building to the land or spatial movements and ornaments depending on the plan type. The unity of architectural language captured in the composition is one of the components that define the street texture of the region. In this context, when the village of Ayvalı is evaluated, the building facades that make up the street texture include not only masonry or mixed buildings, but also rock-carved structures that are frequently seen.

As in other rock-carved areas in the region, the rock-carved spaces, which are the first stage of the housing production process in Ayvalı Village, were produced by transforming the opportunities provided by the materials found in nature into spaces for shelter, worship, seclusion or defence by using simple techniques that do not require expertise (Fig. 9). However, it is not possible to talk about a system or principle on the façades of these buildings, which were created with an approach that can also be called "architecture without an architect" [50], without adhering to a specific order. However, these rock-carved buildings, which do not provide a façade

movement when they are evaluated on their own, created gaps on the rock mass with the way they came together at different elevations, and later merged with masonry buildings and influenced the planning styles, becoming an important part of the general architectural character of the environment (Fig. 10). Since these buildings are organized architectural products, they have an architectural language that brings integrity to the whole region. Although they are not monuments on their own, they have shaped the local identity and transformed them into a part of the local architectural culture with the integration of their coexistence and harmony with the natural environment.

Figure 9. Rock-carved facades

Figure 10. An example of rock carved spaces positioned on a valley slope

In Ayvalı houses, which are mostly two-storeyed and rarely one-storeyed and three-storeyed, the street facades have the highest vacancy rate and therefore the most active facades. The movement provided by doors and small-sized windows on the ground floor facades is achieved with larger windows and ornaments on the second floor, which is hierarchically more valuable. The iwan, which is seen on the ground floor facades of some houses, is one of the building elements that provide differentiation in facades and mass construction. The fact that Ayvalı traditional houses are located on a very sloping terrain causes a difference in size between the four facades of the buildings, while some facades of the houses built against the rock are not visible at all. In addition, the adjoining houses, which are frequently encountered, have one or two facades, except for the houses located at the corners (Fig. 11, 12).

Figure 11, 12. Building types

It is possible to see the rock texture used as a sub-base up to a certain level in buildings built on rocky ground. These curved surfaces, which are unprocessed and shaped by natural erosion, are visible in the lower parts of the building interiors as well as on the facade and become a part of the facade character. The courtyard walls and entrance doors seen in some houses, the stairs where the transition between floors is provided by a staircase formed on the facade, and the balcony unit transformed into a staircase landing are also elements that provide mass movement on the facade.

Rubble stone and cut stone are used in Ayvalı houses where the materials and construction techniques do not vary much. The front façade, which is given importance, is generally cut stone, and in some houses, rubble stone or rough masonry stone is used in some parts of the ground floor (Fig. 13). Although this type of stone masonry is also used on the side and rear facades, the corner points are always made of cut stone. As in the interiors of the houses, the use of wood on the facades is limited to windows and doors.

Figure 13. The combination of rubble stone and cut stone wall construction techniques

The roofs, which are the finishing elements of the buildings, are flat roofs. The roofs are limited by the overhang of the eaves moulding from the facade surface, creating surface movement. The similarity of the materials between the buildings and the fact that these materials are obtained from nature have ensured that the houses stand as a continuation of the topography on the already rocky terrain and a harmonious construction with the environment has emerged (Fig. 14).

Figure 14. Roof form in buildings and its harmony with the environment

5. Facade Elements and Typology Studies in Traditional Ayvalı Houses

The main building type that shows the density of the traditional pattern, which is one of the basic elements of the local identity components in Ayvalı, and its integration with the natural environment are the houses. In order to determine the effects of the houses on the texture, façade analysis and typology studies were carried out. Since it is not possible to talk about the façade typologies of the rock-carved units, whose impact on the surrounding silhouette was discussed above, due to their free form, the typology study was carried out on mixed (rock-carved + masonry) and masonry buildings (Tables 1, 2).

Table 1. Facade typologies of rock-carved + masonry buildings

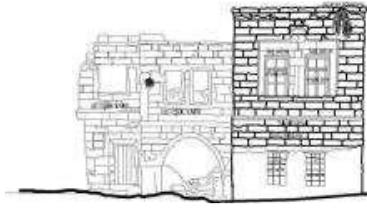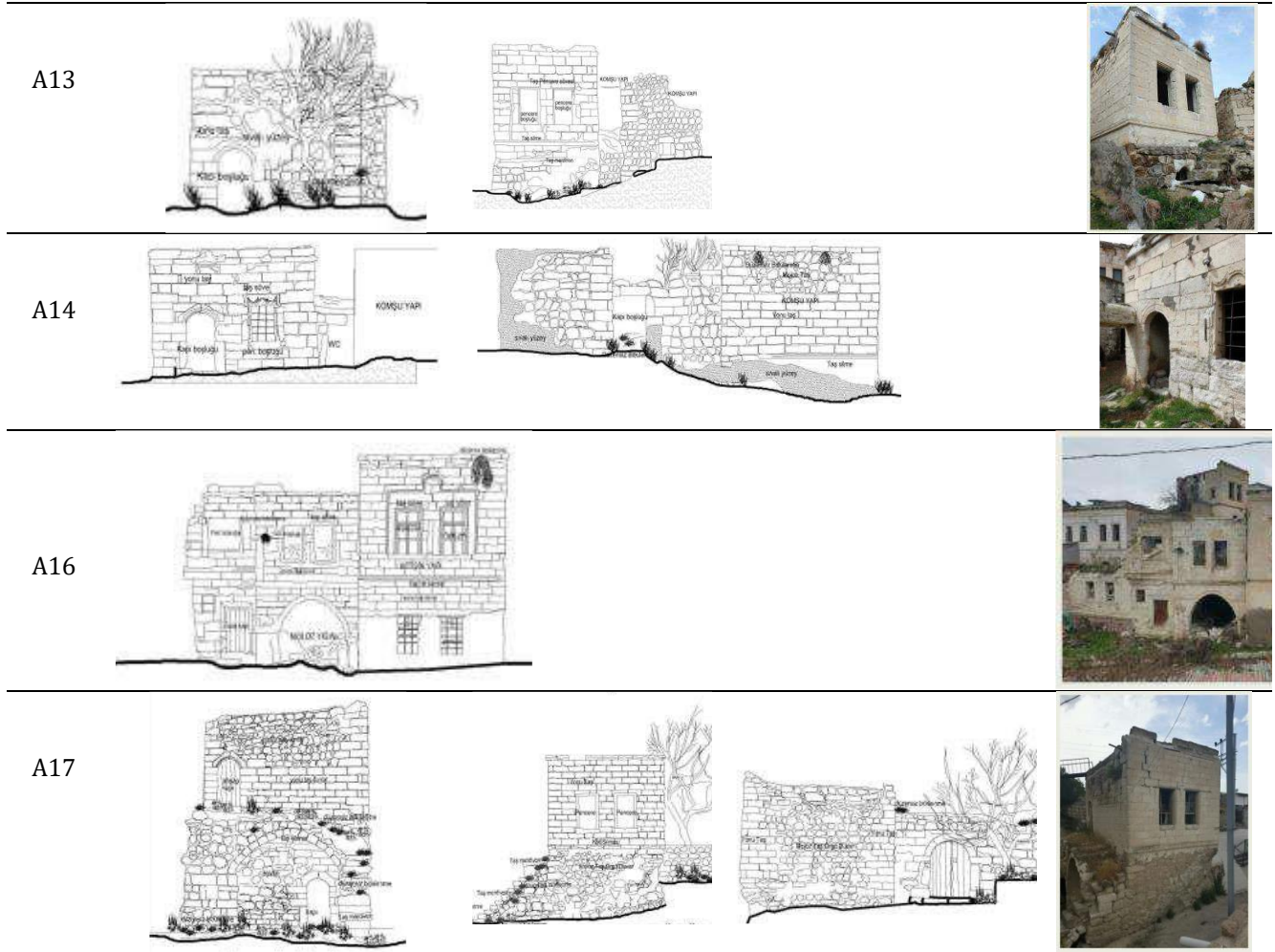| Code	Front Facade	Side Facade	Rear Facade	Photograph
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A03				
A08				
A11				

A15		

Table 2. Facade typologies of masonry buildings

Code	Front Facade	Side Facade	Rear Facade	Photograph
A04				
A05				
A06				
A07				
A09				
A10				
A12				

Although masonry and mixed building facades in Ayvalı show similarities in terms of material use, diversity, construction method, layout and form of façade elements, they do not reflect the diversity of faith/ethnicity that is intensely seen in the Cappadocia region. For example, the differentiation caused by religious beliefs in Christian and Muslim houses is absent in Ayvalı houses. The sense of privacy is effective in the formation of almost all houses. The differentiation is more between masonry buildings that were added to rock-carved spaces and masonry buildings that are dated to a later period in terms of timing. Due to the simplicity in the planning of the mixed construction system houses, there is no façade movement caused by overhang or recession, while some masonry buildings have this façade movement. However, these houses are fewer in number. The surface mobility created by façade elements such as jambs on the edges of windows and doors, floor mouldings, floor overhangs, corner chamfer and eaves moulding seen in some houses is seen in almost every house.

5.1. Windows

The window openings on the facades of houses for lighting, ventilation and establishing a visual connection with the street are generally concentrated on the front facades of Ayvalı houses. On the side facades, they are rarely located close to the front facade, coinciding with the cedar elevation. Depending on the floor they are located on, their dimensions, forms and elevations on the floor facade vary. Ground floor windows are generally smaller in size and above the eye level due to their reduced relationship with the street and low light requirement. They are mostly flat-arched, but it is also possible to find flat-arched windows with an arch form from the inside. There are no reliefs or decorations on the ground floor windows. However, in some houses, the dimensions of the ground floor windows are also kept large on the facades facing the courtyard, which are at a distance from the street. Upper floor windows are organized in groups of two and have rectangular forms. They are larger and more spectacular than the ground floor windows. In a large proportion of the facades, window jambs were embossed to provide surface movement, and in some windows, in addition to this, decorations were made on the jambs. This situation caused a horizontal and vertical linear movement on the facade (Fig. 15, 16). Flat lintelled, arch-shaped windows are seen in different forms on the exterior and interior wall surfaces (Fig. 17, 18). Some of the arched windows have plain stone decorations. Although the windows of some traditional houses still in use have been replaced with plastic-based joinery according to today's conditions, the original joinery was made of wood. Some buildings have iron railings on the windows at low levels. It is observed that these iron railings have plain and flat forms.

Figure 15, 16. Examples of upper floor windows from the facade

Figure 17, 18. Examples of windows from the interior

5.2. Doors

Doorways, which provide the connection between spaces, are classified as interior or exterior doors according to the position of the surface they are located on. However, it is not possible to make this distinction in the examples planned without sofas and with single cells, except for the courtyard door, if any.

Although there are examples with flat lintels on the courtyard entrance doors in Ayvalı houses, the use of arches is common. The courtyard walls are generally shaped with rubble stone, but the frame of the courtyard door is made of masonry stone. There are a few examples with decoration on the stone surface. There is no wood workmanship on the door wings made of wood as double wings, they are formed with the simplest technique by bringing the wood pieces side by side longitudinally and connecting them with horizontal wooden beams thrown at certain intervals on the back surface. The street doors, through which the houses are accessed, open onto the ground floor if the house has a living room or directly onto the ground floor if it does not have a living room. In addition to the doors with flat lintels, arched doors were also used, and some doors have flat weft and arch forms. In some of them, the surface movement created by overflowing the door jamb and plain stone decorations are seen. There is no wood workmanship on the single-leaf doors made of wood.

Room doors, which are classified as interior doors, are placed near the corner where two walls intersect and generally on the long side of the rectangular room in order to provide distribution from the sofa to the spaces. They provide the separation of the room and the sofa

floor with a threshold elevation made of stone material and are generally located within the depth of the threshold distance from the surface of the sofa wall and up to 50/60 cm from the surface of the room wall. The use of arches is also common on interior doors. The door frame is also made of wood and plain.

5.3. Oriels

Although the floor oriel, which is formed by the overhang on the upper floor in traditional houses [51], is very rarely seen in Ayvalı houses, examples of both groups were encountered. In a small number of buildings, the houses, which were built by retreating on the ground floor due to the necessity of conforming to the plot, were transformed into a regular rectangular form with angled and closed floor oriel on the upper floor. An example of open floor oriel is seen on both the front and rear facades of the building coded A04 (Fig. 19). The front façade is formed by placing a stone slab on a vertical console on the façade surface in order to transform the interior sofa into a balcony. In the same way, the open oriel created at the back is not a single unit this time, but is applied in length to meet the room and balcony.

Figure 19. An example of open oriel

5.4. Mouldings

The storey moulding made by overflowing the stone material from the building surface is an aesthetic contribution that gives horizontal mobility to the facade. Storey moulding, which are horizontal surface movements that visually separate the two floors from each other based on the upper floor level on the facade, are very common in Ayvalı traditional houses, especially on the front facades. It is rarely seen on the rear facade, and in some examples, it was observed that the floor moulding on the front facade partially continues on the side facades. In some examples, stonework was also found on the floor mouldings.
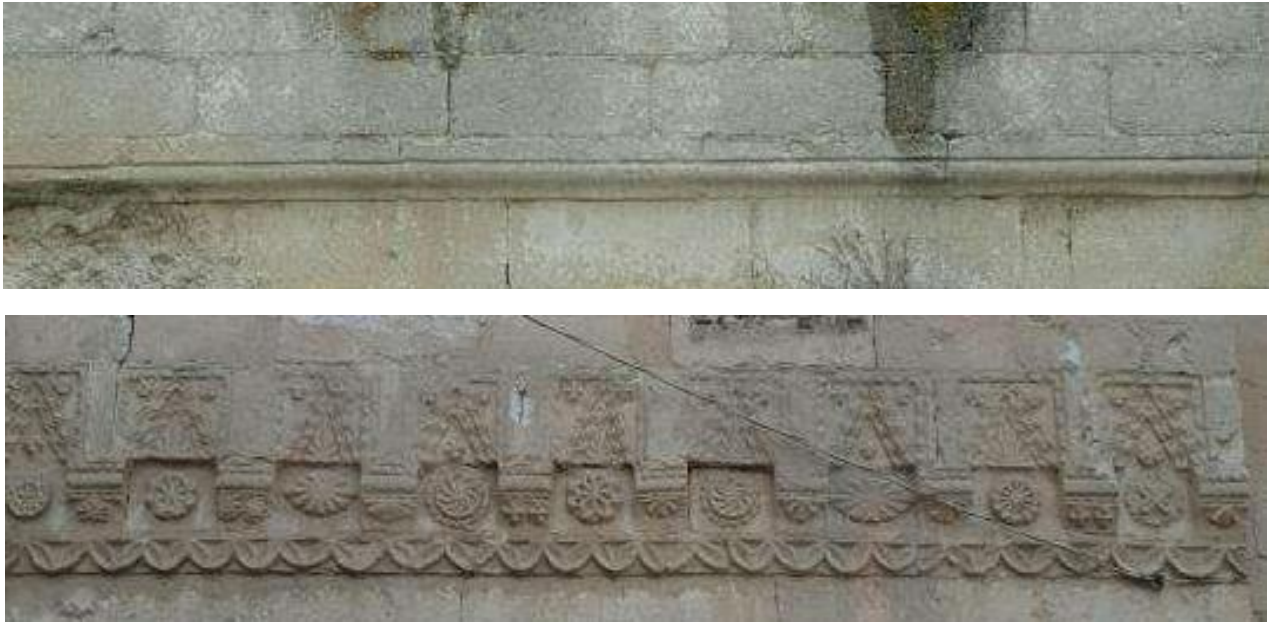
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Figure 20, 21. Plain and decorated moulding samples

5.5. Corner "Çalık" (Chamfers)

An example of a corner chamfer formed by chamfering the right-angled walls corresponding to the corners of the houses located at the corner turns of the streets was seen in a house. The corner chamfer, which can continue up to the first floor level, was made below the floor level in this house.

5.6. Wall decorations

Examples of stone decoration seen especially on the front facades of Ayvalı houses are generally seen on window door jambs or floor mouldings. In some examples, small motifs are placed in a symmetrical arrangement on the wall surface. Generally, floral and geometric forms are used. The fact that the stone used as building stone is workable facilitated the decoration workmanship, but despite this, there are no examples of intense decoration throughout the village. The building facades are generally plain and simple.

6. Discussion and Conclusion

Rock-carved structures, which are part of the Ayvalı housing texture and the first stage, are mostly seen in the valley region and in the old settlement area of the village. These spaces, which were carved side by side and on top of each other according to the slope of the valley, were carved by human hands but without a defined design principle, are a part of the surrounding texture with their transitions at the points where they meet the external environment and the stairs carved into the rock, which provide vertical circulation for those at different levels. The rock-carved + masonry building form was applied using two different methods. Either a cut stone iwan was added to the front opening of a rock-carved structure and the masonry section was enlarged from this point onwards, or the masonry section was built on top of the rock-carved structure. It is possible to see both types in the houses of Ayvalı village. If the rock-carved space is located on a land that allows horizontal growth in front of it, the masonry building was added in front of the rock-carved structure. If the rock-carved structure is on the valley slope, close to the road and there is no opportunity for horizontal growth, the masonry building was built above the rock-carved structure. Although there is no major difference in terms of mass composition in masonry buildings, it is observed that they have more facades than rock-carved + masonry buildings located on the valley slopes.

While the construction dates of the houses date back to earlier periods, especially the sections that stand out with their masonry construction techniques are generally from the 19th century and their architects or craftsmen are unknown. All dwellings were shaped by local craftsmen, who are part of the cultural memory in accordance with the rural architectural construction tradition, and the knowledge passed down from generation to generation through local construction techniques. While constructing the buildings, a harmonious approach was developed with nature and the environment, and this integration created a rich visual perception. In fact, many areas that can be characterized as cultural landscapes are located within the settlement. The fact that this texture has survived to the present day in its original form and that the original building materials, building elements and massing can still be traced is a feature that has been lost in many historical settlements. Although there are many abandoned buildings, the fact that the original users still live in the village is an important advantage in terms of social sustainability. This authenticity of the buildings, the natural environment and the traditional texture has an important potential for functional and spatial transformations that can be realized depending on current living conditions and regional developments. However, structuring these transformations in accordance with conservation legislation and ethical principles is an extremely important issue in terms of the loss of authenticity.

Synthesizing the publications and conservation legislation examined within the conceptual framework, eight basic components have been produced that affect the meaning of space and settlement and determine local identity characteristics, especially in rural architectural heritage areas (Fig. 22). It has been determined that all components can be traced in the traditional housing pattern in Ayvalı. These components were compared with ICOMOS definitions of vernacular architecture and spirit of place indicators (Table 3).
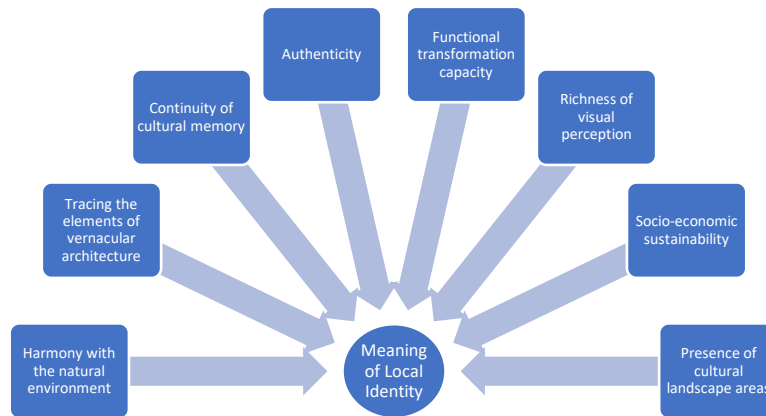

Figure 22. Local identity components in rural architectural heritage areas
Table 3. Comparison table

	C1	C2	C3	C4	C5	C6	C7	C8
V1		▓	▓	▓			▓	
V2	▓	▓		▓		▓		▓
V3		▓		▓		▓		
V4		▓		▓				
V5	▓	▓						▓
V6				▓		▓		
S1	▓	▓						▓
S2	▓					▓		▓
S3	▓							▓
S4	▓							▓
S5					▓			
S6		▓						▓
S7		▓						▓
S8		▓						▓
S9	▓							

(Vernacular architecture features.: ((V1) A manner of building shared by the community, (V2) A recognisable local or regional character responsive to the environment,(V3) Coherence of style, form and appearance, or the use of traditionally established building types (V4) Traditional expertise in design and construction which is transmitted informally, (V5) An effective response to functional, social and environmental constraints, (V6) The effective application of traditional construction systems and crafts) (ICOMOS, 1999)

Indicators of the spirit of the place: ((S1) Characteristics of the geographical and natural environment, (S2) Natural heritage that is sacred through the meanings attributed by societies, (S3) The way the relationship between communities and the natural environment has evolved over time and is expressed in cultural landscapes, cities, urban and rural areas, (S4) Places of human ownership, such as urban and rural open spaces, scenes and spiritual manifestations of social life, (S5) Built spaces that express a particular way of solving needs for the development of human life, (S6) Material components that influence the specific identity of urban spaces such as pavements, forestry, signage, lighting and urban furniture, (S7) Various functions and professions that have developed over time in the spaces constructed by human beings, (S8) Social processes evident in the production and reproduction of cultural objects, (S9) Successive contributions from different cultures that characterize the settlement) (ICOMOS, 2008b)

When these components are evaluated for Ayvalı, it is seen that all components are met at different levels.
C1: Harmony with the natural environment: In rural areas, factors such as natural environment, cultural landscape and agricultural activities are integrated with architectural heritage to form a holistic local identity definition. Harmony with the natural environment, which is one of the main features of the traditional texture, makes itself felt intensely in Ayvalı settlement texture. All of the natural formations such as valleys, streams, slopes and fairy chimneys, which are among the most important identity markers of Cappadocia, are evident in Ayvalı. Living spaces located in and around the valley in harmony with the natural landscape are emphasized with rock-carved spaces and have become an important indicator that gives spatial and environmental meaning to Ayvalı with a holistic perception.
C2: Tracing the elements of vernacular architecture: The fact that the traditional pattern still exhibits its original features is an important indicator of Ayvalı's rural architectural heritage. Except for a few re-functionalized buildings such as hotels and restaurants, there are no major interventions in the majority of the buildings. This

situation ensures that the living conditions from centuries ago can still be observed and supports the meaning of heritage as a texture that exhibits itself.

C3: Continuity of cultural memory: In Ayvalı, as in other regions in Cappadocia, although there have been migrations at different periods, there is a continuous settlement continuity that has continued uninterruptedly for thousands of years. This continuity has ensured that living conditions, construction techniques and cultural memory have been passed down through generations, even if they have different ethnic origins and religious beliefs.

C4: Authenticity: It is a very important advantage that the traditional texture of Ayvalı has survived to the present day with its original features. The original spatial arrangement, facade composition and structural elements in the houses can still be clearly observed. All buildings are in a condition to be used with their original function after simple or comprehensive restoration interventions.

C5: Functional transformation capacity: A rapid transformation process is observed in Cappadocia, which is on the World Cultural Heritage List and has always been an attractive area for tourism with its natural and built environmental features. This transformation continues inevitably not only in urban centers but also in rural settlements such as Ayvalı. Although it is preferred that buildings are used primarily for their original functions, it is important that these interventions are made without damaging the original spatial and environmental relations when a change of function is required. The sensitivity of the people living in Ayvalı towards the protection of rural architecture can provide a positive transformation capacity.

C6: Richness of visual perception: The valley, river, green areas, rock-carved areas, fairy chimneys, monumental structures and dense residential pattern in Ayvalı create an impressive visual richness.

C7: Socio-economic sustainability: The people of Ayvalı, although they have mostly moved away from the valley region or the population has decreased due to migration, still continue to live in Ayvalı. This situation provides socio-cultural transfer between generations. In the activities carried out for tourism purposes in the village, the users of the buildings in Ayvalı are also a part of this transformation.

C8: Presence of cultural landscape areas: The unity of rock-carved spaces, green areas and living spaces manifests itself in Ayvalı as cultural landscape areas, which are an important component in terms of conservation legislation.

These eight basic components developed for Ayvalı can be used as indicators of local identity in all settlements defined as rural architectural heritage. Paying attention to these components in current or future restoration and re-functioning works will be useful in developing an approach that can be used in Ayvalı's future planning strategies.

Especially considering the special status of the Cappadocia Region, which is on the UNESCO World Cultural Heritage list, and the fact that Ayvalı is located within this protected area, the identification of such components will facilitate the development of a management strategy for both local governments and international conservation organizations.

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Author contributions

Tuğba Ağbaba: Field study, Writing- **H. Hale Kozlu:** Conceptualization, Methodology, Writing, Discussions.

Conflicts of interest

There is no conflict of interest between the authors.

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