



## The Tourism Potential of Çayönü Tepesi and Hilar Rocks from the Perspective of Archaeo-Tourism and Geo-Tourism

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### Abstract

Çayönü Tepesi, one of the outstanding Neolithic settlements of Anatolia, and Hilar Rocks with their well-preserved karst shapes are located approximately 6 km southwest of Ergani district in Diyarbakır province. Çayönü Tepesi is one of the rare settlements identified in Anatolia, Levant, Mesopotamia and Zagros regions with an uninterrupted stratigraphy from the beginning of the Pottery Neolithic Period to the first half of the Pottery Neolithic Period. Çayönü Tepesi and the rock tombs on the Hilar Rocks next to it are substantial tourism destinations with a cultural heritage identity. However, the Hilar rocks are also important in terms of their geological heritage value, both with their natural site identity and their karstic shapes. This study evaluates the karstic shapes of the Hilar Rocks in terms of geo-tourism and offers suggestions to improve the tourism potential. It also aims to evaluate and present the archaeo-tourism and geo-tourism potential in the context of the natural relationship between the Çayönü Tepesi Neolithic settlement and the Hilar Rocks, thus emphasizing the importance of the cultural and geological heritage of the region.

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## 1. Introduction

Conservation of cultural and natural heritage is an area that various countries and organizations have focused on in recent years. The protection of both geological structures and endemic plant species is now considered in the context of 3rd generation rights with the remains unearthed by archaeological excavations (Arslan, 2010; Özdoğan 2006), which have a history of approximately 150 years in Anatolia (Dadak, 2015; Dağistan-Özdemir, 2005). Mesopotamia, at the junction of various cultures from prehistoric times to ancient times and the host of numerous civilizations, has both a cultural and geological heritage that has been preserved until today. In the context of protecting the geological heritage, which is the remnants of evolution on our planet as well as the cultural heritage, and especially as a geo-tourism resource, the Hilar Rocks close to the Çayönü Tepesi Neolithic settlement are an excellent example combining geo-tourism and archaeo-tourism (Figure 1).

Tourism activities in the form of tours, visits and the presentation of cultural and natural heritage are a mutual exchange involving many different disciplines such as archaeology, history, geography, geology or geomorphology. Cultural tourism, also called archaeo-tourism, is a model that focuses on visiting or experiencing ancient or historical places (Tuncer and Bulut, 2019). The main triggering factor in the formation of archaeo-tourism is the curiosity of modern people about the past or the desire to learn about ancient cultures (Srivastava, 2015). Archaeo-tourism can include places of historical importance, archaeological museums, historical or archaeological parks, open-air museums and even participation in activities in prehistoric-ancient villages, such as concerts in Roman amphitheatres

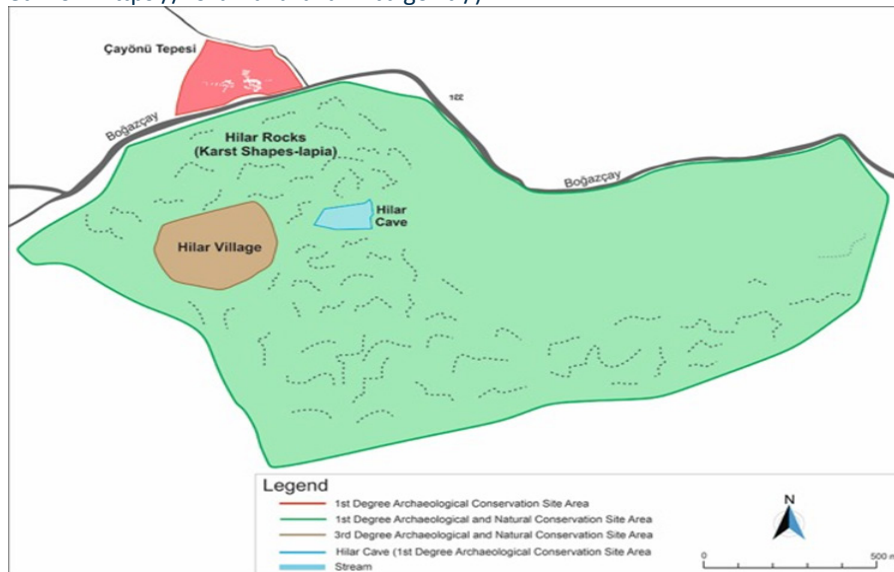
Geological heritage is a broad category (Cahyadi, 2016). However, it would be wrong to limit geological heritage only to geological objects. On the contrary, this category highlights the characteristics and impact of locations with undeniable geological importance on cultural development (Neches and Erdeli, 2014). In this context, when the Hilar rocks, which can be viewed as geological heritage, are evaluated together with Çayönü Tepesi, the area in question

may be classified within the scope of cultural heritage, as well as its geological heritage. The concept of “Cultural Geology” is where cultural heritage and geological heritage are handled as a whole. This factor in the formation of tangible cultural assets or intangible cultural identity, or the “natural infrastructure” used in the maturation process of culture, has been defined as “everything belonging to nature” (Kazancı et al., 2017). It is essential to evaluate the geological and archaeological evidence of Çayönü Tepesi and its surroundings in the context of Cultural Geology in order to plan its preservation and thus to open it to tourism.

**Figure 1.** Location of Çayönü Tepesi and Hilar Rocks (Source: Çayönü Tepesi Excavation Archive)



**Figure 2.** Boundaries of the Natural and Archaeological Conservation Sites (adapted from <https://korumakurullari.ktb.gov.tr/>)

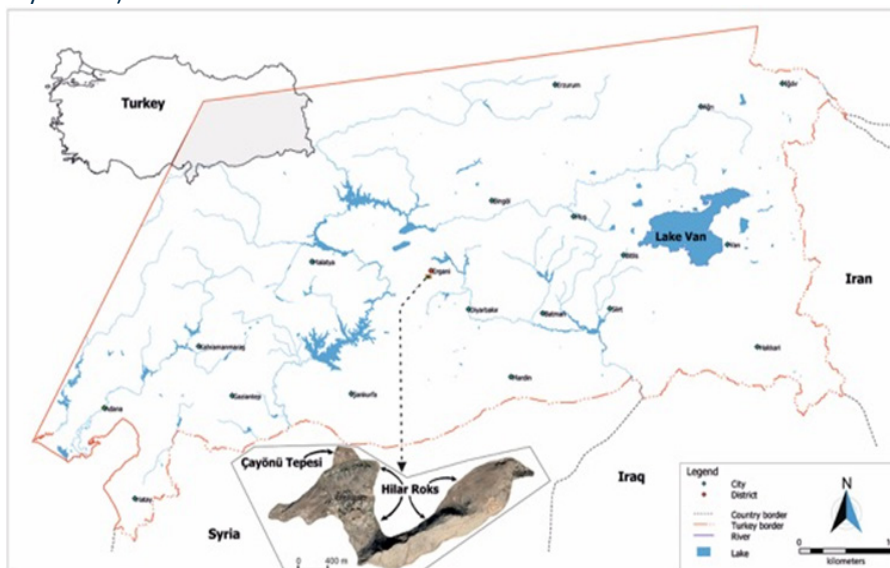


The most important geo-tourism area on the Ergani Plain, which is a polje (Meşeli, 2005) where karst shapes are common, is the Hilar Rocks, which were officially declared a natural site in 1990 to protect the corrugated lapia and old quarries (Figure 2). The corrugated lapia formations, which are very common in this area, contain notches showing the old lake boundaries and old stone quarries that are part of the cultural heritage, as well as the Hilar Rocks and Cave, which are archaeological sites. Just on the northern slope of this rocky area, which can be considered within the scope of geo-tourism and archaeo-tourism, is the world-famous Çayönü Tepesi, which is a key settlement in the archaeological context. Although there was no natural border between the rocky area in the Neolithic Period due to the new bed of the Boğazçay Stream, which is claimed to have been opened around 3000 BC (Özdoğan, 2010), the Hilar Rocks/Caves and the Çayönü Tepesi Neolithic settlement were partially separated. Explaining the geological or geomorphological processes around these cultural areas, which can be evaluated with an integrated approach in the geological and archaeological context, the axis of geo-tourism and archaeo-tourism will create a locomotive effect in promotion of the region.

## 2. Geographical Features of the Study Area

The most important geo-tourism area on the Ergani Plain, which is a polje (Meşeli, 2005) where karst shapes are common, is the Hilar Rocks, which were officially declared a natural site in 1990 to protect the corrugated lapia and old quarries (Figure 2). The corrugated lapia formations, which are very common in this area, contain notches showing the old lake boundaries and old stone quarries that are part of the cultural heritage, as well as the Hilar Rocks and Cave, which are archaeological sites. Just on the northern slope of this rocky area, which can be considered within the scope of geo-tourism and archaeo-tourism, is the world-famous Çayönü Tepesi, which is a key settlement in the archaeological context. Although there was no natural border between the rocky area in the Neolithic Period due to the new bed of the Boğazçay Stream, which is claimed to have been opened around 3000 BC (Özdoğan, 2010), the Hilar Rocks/Caves and the Çayönü Tepesi Neolithic settlement were partially separated. Explaining the geological or geomorphological processes around these cultural areas, which can be evaluated with an integrated approach in the geological and archaeological context, the axis of geo-tourism and archaeo-tourism will create a locomotive effect in promotion of the region.

**Figure 3.** Map showing location of the study area (Çayönü Tepesi and Hilar Rocks, Diyarbakır)



Geologically, Ergani Plain looks like a young depression. The oldest units of the area are Upper Cretaceous limestones and ophiolites. Eocene-Oligocene aged clayey-limy units lie around the Hilar Rocks and Çayönü Tepesi, which constitute the main subject of the study area. However, the limestones on the high hills surrounding the plain represent Miocene marine successions. These Miocene aged limestones disappear under the Karacadağ volcanics in the south of the plain (Sayhan, 1998). The Southeast Anatolian volcanism, shaped based on the Mt. Karacadağ volcanism, which is the product of north-south compression, began in Upper Miocene and continued into Late Pliocene-early Quaternary (Tolun, 1962; Altınlı, 1966). The Mt. Karacadağ volcanism, which developed in the form of plateau basalts, generally rejuvenates from northwest to southeast and spreads outwards with basalt flows (Şaroğlu and Emre, 1987).

The most important factor leading to the formation of the Ergani depression is that the basalt flows spreading to the north as a result of Karacağ volcanism limited the studied area from the south. This basalt expansion caused the Ergani depression to be detached from the Tigris River Basin because it limited the Ergani depression, especially from the south and also under the effect of tectonic factors. As a result of all these external limiting factors and the waters coming from the high mountainous area to the north, a lake environment was formed in the Ergani depression. However, in the later period as the old lake area was re-incorporated into the Tigris River Basin in the south, the waters in the area were partially drained and terrestrial deposits and the Ergani Plain basin floor were stacked at the end of Pliocene. In addition, the waters accumulated in the Ergani depression via Boğazçay Stream formed during the Alpine Pleistocene-Middle Pleistocene period were connected to the Dizle River Basin (Sayhan, 1998). When all these are considered together, the Ergani Plain, which started in Upper Miocene but became a depression from Pliocene onwards, has the characteristics of a young structure.

The lapia formations on the Hilar Rocks of the study area are karstic shapes that developed in calcareous succes-

sions formed in Upper Miocene and Pliocene and continue to be formed today. The Hilar Caves in Hilar Rocks (Çambel and Braidwood, 1980), however, dating to Late Antiquity, as well as the old stone quarries, are a human-created cultural heritage that remains within this lithological unit.

Ergani Plain is in the "Dry Forest (Oak-Red Pine) Section" (Atalay, 2002) according to the ecological region classification of Turkey. When the precipitation and temperature values of the study area are examined, it is seen that the temperature values do not fall below 0°C in any month, but the daily and seasonal oscillations are high. Therefore, a strong mechanical dissolution is dominant in the study area. The average temperature in July, when the temperature is the highest, is 29.6°C. The annual average temperature is 15.3°C. The lowest temperatures (2.1°C) are seen in January. Ergani Plain, with its annual precipitation of 767.4 mm, receives relatively more precipitation than the surrounding areas. An average of 600-700 mm of precipitation per year falls on the areas with the least rainfall around the Ergani Plain (Çağlayan and Durmuş, 2012). In this context, even the places with the least rainfall around the study area can be considered as moderately rainy with an average of 600-700 mm of precipitation per year. Apart from the geomorphological factors, the climatic factor of the lapia formations of the Hilar Rocks is due to the excess amount of precipitation falling in the region. Likewise, it can be argued that another reason why the Çayönü Tepesi settlement was inhabited uninterrupted for about 3000 years was the ease of finding food in the surrounding area, thanks to these favourable precipitation conditions. Similarly, although many settlements in Upper Mesopotamia were abandoned for various reasons during Holocene, the settlement on Çayönü Tepesi continued for some time. (Erim-Özdoğan, 2011)

### 3. Hilar Rocks and Caves: Geo-tourism potential of Rock Tombs and Karst Formations

The collection of shapes formed as a result of karstification is called "Karst Topography" (Şahin, 2003). Karst landforms are the shapes formed on stones that can be dissolved by the action of water. However, stones such as limestone, gypsum, dolomite and rock salt dissolve faster than others. Therefore, these are karst stones, and the dissolution of these stones by the effect of water is called karstification.

There are settlements of different qualities belonging to prehistoric and historical periods in our country for thousands of years and almost all of it. Karst areas are used both as building construction materials and as in the rocks of Hilar, rock tombs are frequently used because it is an easily workable rock. Therefore, karst areas are frequently exposed to human intervention both in prehistoric times and historical times, and moreover today. Undoubtedly, this effect mostly causes the topographical change of the natural environment, albeit partially. Therefore, the unique ecosystem and formation process of karst areas are damaged. Therefore, it is necessary to make plans based on scientific data regarding karst areas as a priority, and activities that will damage karst areas and shapes should be minimized. Hilar Rocks, which contain unique examples in the context of archaeological and geological heritage, were one of the priority areas to be explored and protected.

The Hilar Rocks, which have been protected as a first-degree natural site in the Southeastern Anatolia Region since 1990 and whose protection boundaries were expanded in 2014 (<https://korumakurullari.ktb.gov.tr/>), are both a geo-heritage as well as cultural heritage. Located approximately 6 km southwest of the Ergani town centre and just south of the Çayönü Tepe Neolithic settlement, this natural site was discovered for the first time by Ellsworth Huntington in 1903 and was introduced as "Hittite Artefacts" due to the reliefs on the entrance doors of the rock tombs (cited in Çambel and Braidwood, 1980). Halet Çambel and Robert John Braidwood conducted archaeological excavations of these rock tombs in 1979. Based on the reliefs and three separate burial chambers with a kline and an arcosolium, they concluded that these rock tombs must belong to the First Christian Period. However; they claimed that "Direkli Mağara (Cave of Poles)" was used as a caravanserai for a while due to the animal tethering places found on the side of the walls and poles. "Direkli Mağara" is an artificial cave located very close to the rock formations (Çambel and Braidwood, 1980).

**Figure 4.** Corrugated lapia formations developed in Hilar Rocks (a-f, i) and some notches representing Paleo-lake shores (b, d, f-i). (Source: Author's archive)



The free lapia are karstic formations that occur on bare rock surfaces under the impact of raindrops and runoff (Doğan, 2015). Corrugated lapias, which are formed within the lapia formations, especially as a result of surface flow, are widely observed on the surfaces of the Hilar Rocks and along the cliff slopes (Figure 4). In corrugated lapia formations, the direct effect of rainwater on carbonate rocks is the most important solvent and shaping factor. In addition, channelled lapia from free lapia and corrosion notches from semi-free lapia are more developed on surfaces with low slope values. Channelled lapia within free lapia are shallow and thin karstic shapes formed by rainwater on inclined surfaces (Graf and Bozcu, 2006). This lapia formation can be observed from place to place, especially in the part of the Hilar Rocks facing Çayönü Tepesi. However, corrosion notches were also formed in the same area, albeit very few. Apart from these, wave notches can be easily seen, especially on the northern slopes of the Hilar Rocks, which are made of limestone. These formations are very important in terms of determining the shoreline boundaries of the paleo-lake in Ergani Plain, which is a polje.

#### 4. Çayönü Tepesi: Archaeological importance and archaeo-tourism potential

Çayönü Tepesi settlement is located to the north of Diyarbakır city and just north of the Hilar Rocks. Today, south of the settlement is Boğazçay Stream and to the north is the Bestakot intermittent stream. The Ergani Plain where the settlement is located is surrounded by geographical areas with different characteristics such as the Southeast Taurus Mountains to the north, the Euphrates River to the west, the Tigris River to the east, and a series of mountainous plains cut by these rivers and their tributaries, with the Diyarbakır subsidence basin to the south (Erim-Özdoğan, 2007). This neolithic site is the longest inhabited settlement in Mesopotamia and Anatolia. Changes in the oscillations of the stream to the north of the settlement, for various reasons, are often determinative in the settlement layout and architecture. Although the settlement covers an area of 5.7 ha, the data show that it expanded towards the plain in front of the Hilar Rocks.

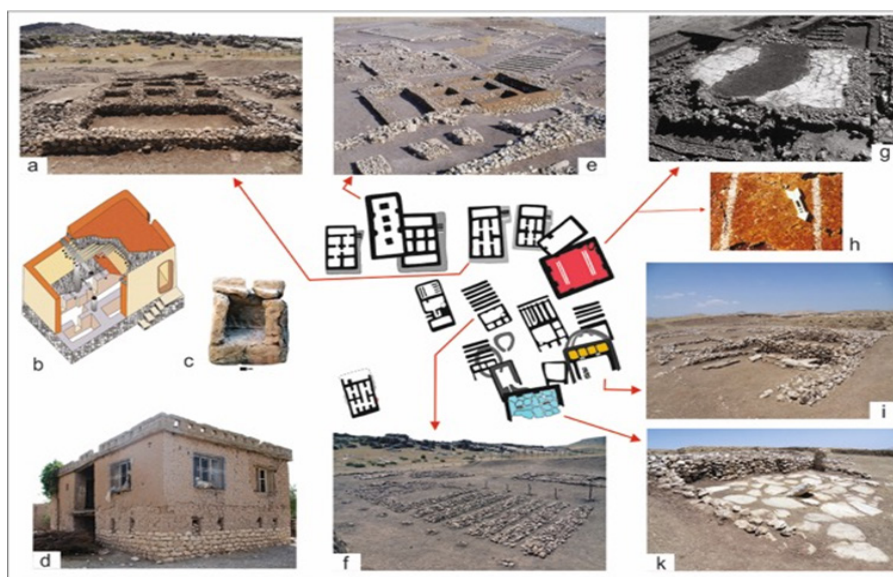
The altitude of the settlement is 832 meters. The settlement covers an area of approximately 5.6 hectares and has a culture fill of 4.5 m in the southern part and 6.5 m in the northern part (Erim-Özdoğan, 2007). The Pre-Pottery Neolithic (Çayönü Main Phase) and Pottery Neolithic, Chalcolithic Period, Early Bronze Age I-III, 2nd Millennium BC and Iron Age have all been identified at Çayönü Tepesi, (Çambel and Braidwood, 1980).

Excavations on Çayönü Tepesi were carried out within the scope of the "Southeast Anatolia Mixed Prehistory Project" jointly carried out by the Istanbul University Department of Prehistory, Chicago (USA) and Karlsruhe (Germany) universities (Erim-Özdoğan, 2007; Erim-Özdoğan, 2011). The Çayönü Tepesi settlement, dating back to approximately 10,000 years ago from the beginning of agricultural village life, in other words, the early Neolithic Age, has become an important centre of not only Anatolian but also Near Eastern archaeology and is a key settlement that best reflects this period of human cultural history. Çayönü Tepesi is the first excavation in the Southeast Anatolian Region, which had been closed to research for a long time (Erim-Özdoğan, 2011).

Çayönü Tepesi is a settlement in Anatolia, the Levant, Mesopotamia and Zagros regions giving uninterrupted stratifi-

cation from the Pottery Neolithic A (PPNA) to the first half of the Pottery Neolithic Period; in other words, between 10,200 and 8,000 BC. Çayönü also has the characteristics of a settlement where many “firsts” were identified. These include the transition to the cultivation of legumes such as lentils, chickpeas and grains, the first metallurgy (pyro-technology), the first linen weaving, wicker and basketry, leather making and pottery production, and jewellery made of various stones. The period also stands out for exceptional features such as the Terrazo Building, which is the pinnacle of the use of lime by quenching, and the Skull Building, which reflects the concept of the cemetery embodied in architecture.

**Figure 5.** Some architectural structures (dwelling) unearthed in the Çayönü Tepesi Neolithic site and some of them after restoration (a,e,f); Terrazo Building and its floor detail (g, h); Skull Building (i); Flagstone Building (k); a model house found in the excavations at Çayönü Tepesi (c); reconstruction of a Cell Building from Çayönü Tepesi (adapted from Biçakçı, 2001) an example of contemporary rural architectural structures around Ergani District (d), and the drawing of the Open Air Museum area in the middle (Source: the Çayönü Tepesi Excavation Archive).



Çayönü Tepesi Pre-Pottery Neolithic settlement covers 2400 years (Table 1) and has more than 50 levels. Some of these building levels have survived to the present day in good condition, while others have only been identified by fragments of walls. In addition, the building levels are often intertwined, leaving very little landfill between them. The building types of the Çayönü Tepesi settlement and 5 building levels representing the most distinctive features of the settlement plan from past to present have been selected and exhibited faithful to their originals. For this purpose, well-preserved examples of “Round Planed Buildings”, “Grid Planed Buildings”, “Stone Paved Buildings”, “Square (Plaza)”, “Cell Planed Buildings” and “Large Roomed Buildings” were selected. However, regardless of these building levels, the large and monumental “Saltaşlı Building”, “Skull Building”, and “Terrazo Building” are preserved (Figure 5) in their original form (Erim-Özdoğan, 2007; Erim-Özdoğan, 2011).

The phase shown in Table 1 is the longest-lasting settlement of Çayönü Tepesi and has been extensively studied compared to other phases.

**Table 1.** Strata of Pre-Pottery Neolithic phases from Çayönü Tepesi (adapted from Erim-Özdoğan, 2011:192)

Phase	Abbreviation	Period	Date (BP)
Large Room Building	lr1-6	PPNC	8200-8000
Cell Building	c1-c3a-b	Late PPNB	8600-8300
Cobble Paved Building	cp1-3	Middle PPNB	9000-8600
Channeled Building	ch1-3	Early PPNB	9100-9000
Grill Building	g1-6	PPNA-Early PPNB	9400-9100
Round Building	r1-4	PPNA	10.200-9400

One of the most important features distinguishing the Çayönü Tepesi settlement from other Neolithic settlements is that each phase predominantly has a standardized type of building plan which was changed in the following phase. Therefore, the Çayönü phases are represented by different building types and Neolithic phases, but especially the Pre-Pottery Neolithic phases (PPN) are named according to their building type (Özdoğan, et al., 1994). In the Çayönü Tepesi settlement of the Pottery Neolithic Period is represented by 6 phases and 26 building levels (Erim-Özdoğan, 2007; Erim-Özdoğan, 2011). Today, this development process has been displayed with various structures and ruins in the open-air museum area. It has been ensured that visitors coming to the settlement follow both the excursion route and the detailed information boards.

The Round Buildings phase, which is the first phase of the Pre-Pottery Neolithic period discovered in the Çayönü Tepesi settlement, was mainly the boundaries of the settlement could not be determined since the fillings and architecture here were largely destroyed by the structures of later phases and zoning activity found in the eastern excavation area. During this period, the rock cavities, caves and especially the flat rocky areas on the part of the Hilar Rocks facing Çayönü were most likely used.

The Grill-Planned Buildings phase is the phase represented by the largest number of buildings on Çayönü Tepesi and found over a fairly large area. Although this phase is mostly on the eastern part of the mound, the structures unearthed in the western part indicate that they are more sophisticated in terms of both their architectural features and tombs. This is a solution model unique to Çayönü Tepesi that allows the grid-planned building model not to be abandoned but lived in during heavy floods. Special Buildings appear in this phase. It is noteworthy that the plan of the pit-bottomed Flagstone Building, whose southern half was destroyed by Boğazçay Stream, is on the eastern part of the mound (Erim-Özdoğan, 2011).

The Channeled Buildings Phase at Çayönü Tepesi is the phase where the neolithic settlement expanded the most and had the highest population. The wide-open spaces in the western part of the settlement house the workshops. The only remnant of a building in the area is a multi-roomed building with a rectangular plan, stone basement and mud-brick walls rising on a canal platform. The Grill and Channelled Building types have not been used as typically and widely as the Çayönü Tepesi settlement in Mesopotamia, the Levant and Zagros. On the other hand, both Stone Paved and Cell Planned buildings unearthed in detail on Çayönü Tepesi appear in a much wider geography. These architectural traditions and structures were frequently preferred in almost all PPNB and Early Pottery Neolithic settlements (Erim-Özdoğan, 2007).

The Stone Paved Buildings phase is a period in which the different arrangements of the eastern and western parts of the Çayönü Tepesi Neolithic settlement became more evident. It is claimed that the settlement spread over a wide area, as in the Channeled Buildings phase. The eastern part of the settlement was intentionally abandoned and a planned "first square" was formed by filling the gaps between the Grill Buildings covered with stone piles on this abandoned area with pebbles. In the western part, there is a settlement model similar to that in the Channeled Buildings phase, but the building density has increased slightly. The rectangular Skull Building of this phase contains deep cells dug into the old structures and data from the decomposition of corpses, later arrangements and a series of rituals in these cells. In other words, the Skull Building is a place of burial that houses approximately 400-420 individuals, buried or decomposed, regardless of age and gender (Erim-Özdoğan, 2007; Erim-Özdoğan, 2011).

The Cell Planned Buildings Phase was arranged differently in the eastern and western parts of the settlement. This phase also reflects the traces of natural disasters and changes in the socio-economic structure of the settlement, possibly partly due to these calamities. The Cell Buildings were erected with mudbrick walls on stone footings encircling basement floors. It is thought that the main function of the basements constructed by partitioning in different sizes was to protect the living space from floods. None of the cells in the basements have door openings to external areas. Therefore, it is surmised that the basements were entered from multiple openings above. The basement, which is opened / closed by a lid in the floor of the main living area, was used for storage and/or graves (Erim-Özdoğan, 2007).

The floors above the basements consist of a single rectangular space and the walls are built with mudbrick blocks. No trace of interior partitioning was detected on the upper floor. According to data from the Çayönü house models and burnt mudbrick fragments with traces of beams in the accumulation of buildings, the cell buildings had flat roofs. The main living quarter raised on stone footings is entered via stone stairs.

Staircase remains were detected in most of the cell buildings. The layout of the early cell buildings was generally

standard; whereas towards the end of this phase there were dissimilarities in their plans, such as the number and dimensions of cells as well as their construction technique (Erim-Özdoğan, 2007).

From the initial phase of the Cell Building Phase it is clear that due to changes in the water level of the Bestakot Stream, floods occurred which affected the settlement. These floods led to the accumulation of different thicknesses and qualities of filling in almost all parts of the settlement (Erim-Özdoğan, 2007). These flood events also continued in the Large-Room Building Phase. Up to the fourth sub-phase (Ir4) of this sub-phase, flooding is at the forefront of factors that determined the northern boundary of the settlement. It is understood that flood events also continued in the Pottery Neolithic Period, in particular by the presence of multiple terrace walls. The heterogeneous fillings determined locally are more evidence of the continuity of this phenomenon (Erim-Özdoğan and Yalman, 2004). In the last sub-phase of the Cell Building Phase (c3b), important changes are observed in architectural tradition and settlement patterns. Up until this time, the tradition of “burying and abandoning structures” which had been constant at Çayönü Tepesi settlement ended, and structures were repaired for the first time. Although the tradition of “special buildings” continued with three rectangular buildings superimposed on each other north of the Plaza in the first three sub-phases (Ir1-3) of the Large Room Building Phase, their architectural features such as construction technique and floors or indoor items are not comparable with the previous ‘special buildings’ of the PPNB period (Erim-Özdoğan, 2011).

The Large Roomed Buildings Phase reflects socio-economic changes in the Çayönü Tepesi Neolithic settlement. In general terms, this phase marks a transition from a settled order to a semi-nomadic order based on grazing. There is a striking change in architecture, layout and usage items.

In domestic architecture, the building of two-storey constructions was abandoned. The new structures (large room buildings) are rectangular in plan, single-roomed with rounded corners, and built using a simple stone wall technique. There are no door openings to the structures. It is thought that the entrance to the stone structures was in the interior, similar to stairs of the same height as the walls. In the early examples, mudbrick remnants were found on the stone walls, whereas these were not detected in the following phases (Erim-Özdoğan, 2007).

The main occupation area of the Large Room Building Phase is in the eastern part of the site. The random placement of large room buildings disrupted the order of the outer areas. The “Plaza” of the Cell Building Phase was transformed into a daily use area and later on to a refuse dump (Erim-Özdoğan, 2007). According to Caneva, a different socio-economic structure similar to “pastoral life” developed (Caneva, et al., 1998). All these changes in the Çayönü Tepesi settlement have been defined as the “collapse” of the PPNB period, based on environmental impacts (Erim-Özdoğan, 2007).

The Çayönü “Main Phase”, which is dated to the PPN period, has six sub-phases. The Pottery Neolithic settlement is located immediately north of the PPN settlement and partially above it. The Pottery Neolithic settlement is divided into two sub-phases, namely, ‘Pottery with Kerpiç Architecture (pnk)’ and ‘Pottery with Stone Architecture (pns)’. The Pottery with Kerpiç Architecture sub-phase (pnk) was dated to the Middle-Late Neolithic. Çayönü Tepesi cultural layers belong to the Pre-Pottery Neolithic period (approx. 10.000-8000 BC). Later cultural layers were also revealed during the excavations of this settlement, but no landscaping was done for the visitors. The Pottery Neolithic site extends partially above but mainly to the north of the Pre-Pottery Neolithic mound. The Pottery site consists of three main phases and multiple repair phases with a stone-based one or two-roomed building complex. The cultural fill of the Pottery Neolithic settlement, which was destroyed in places by the Early Bronze Age tombs, is 2.50 m thick. No Late Chalcolithic Age - Early Bronze Age architectural remains were found in the Çayönü Tepesi excavations, and this period is represented by a small number of sherds. Boğazçay Stream, which opened its bed from the north in the Pleistocene period, is oriented towards the south of the settlement in this period. During the Neolithic period, the connection between Çayönü Tepesi and the Hilar rocks was partially broken due to the new bed of Boğazçay Stream in this period. Transcaucasian and Northern Mesopotamian influences, wheels and handmade vessels are seen together in the EBA II-III phases. It is now a small settlement with stone architecture above the Early Iron Age Pottery Neolithic layers. Deep pits are found in different parts of the mound (Erim-Özdoğan, 2007; Erim-Özdoğan, 2011).

## 5. Discussion and Evaluation of Tourism potential

Many values and products that will be the subject of cultural tourism are included in the scope of archaeo-tourism. It is an area that presents the traces of cultural heritage, such as the architectural tradition, nutritional diversity, ritual and social structure of the past, while archaeo-tourism is also evaluated within the scope of cultural tourism, and



information about these past cultures is obtained (Tuncer and Bulut, 2019). One of the most important points that feeds the tourism and development relationship of a region is its cultural heritage values. In this context, Çayönü Tepesi is an important archaeo-tourism destination in the Southeastern Anatolia Region with its archaeological stratification and architectural diversity as well as its unique features.

Archaeo-tourists who fall within the scope of cultural tourism find visible historical sources interesting and curious for various reasons. The tangible or intangible cultural remains of historical and/or prehistoric communities that have been preserved until today and the technological levels reached by the people living at that time have the power to affect the visitors. If the Çayönü Tepesi settlement is compared with the value it has reached in the scientific field, it is difficult to claim that it has the same value within the scope of archaeo-tourism.

Since the concept of culture is very comprehensive when we say cultural tourism, a wide range of cultural activities come to mind, from food culture to archaeological sites and museum visits. Therefore, cultural tourism includes not only the use of tangible assets but also intangible cultural assets.

The surroundings of Çayönü Tepesi and Hilar Rocks are one of the important areas of our cultural and geological heritage, which contains both archaeo-tourism and geo-tourism resources. It has a location that could enhance the cultural and tourism potential of the region and increase regional attractiveness. In the context of archaeo-tourism and geo-tourism, the sustainability of the projects developed so far and to be developed in the future on Çayönü Tepesi and the Hilar Rocks, and the transfer of both geological and cultural heritage to future generations, especially local administrators, it is through the active role of tourism professionals, non-governmental organizations and the public to protect this heritage. It is the joint responsibility of all these stakeholders to preserve the unique karstic shapes, cave-tombs and old stone quarries at Hilar Rocks (Figure 6) area and the Çayönü Tepe Neolithic settlement, and to open up tourism. The only condition for increasing its importance in terms of tourism as well as science can be realized by the joint action of the above-mentioned stakeholders.

**Figure 6.** Tombs used in ancient times (a), old stone quarries (b,d,e), Direkli Mağarası (c) used as a caravanserai in the Middle Ages around Hilar Rosks area. (Source: Author's archive)



Cultural heritage excavated from the ground (Çayönü Tepesi and Hilar Caves) and irreplaceable karst formations formed over hundreds of thousands of years (Hilar reef Lapyas) can be destroyed very quickly if the necessary protection measures are not taken and realistic sustainable planning is not carried out. Moreover, the inability to develop and/or continue tourism projects in the said area may also cause a crucial archaeo-tourism or geo-tourism destination to be forgotten and become meaningless over time. The preservation of cultural heritage or geological heritage is not the sole responsibility of scholars. Especially, when scientific studies have opened sites to tourism and created a destination, tourism professionals have a duty to protect the cultural heritage, added as a new product to existing destinations. If tour operators, travel agencies, guides and hotels, which are indispensable elements in cultural tourism, act according to their responsibilities in this sense, Çayönü Tepesi and Hilar Rocks can achieve the value they deserve.

**Figure 7.** Çayönü Tepesi sightseeing area and information boards and signs (Source: the Çayönü Tepesi Excavation Archive).



Çayönü Tepesi and the Hilar Rocks / Caves offer great tourism opportunities, especially in terms of archaeo-tourism and geo-tourism. However, attainment of this cultural and geological heritage as a sustainable tourism destination depends on both the development of archaeological projects and the establishment of accommodation facilities and information points. Despite having significant tourism potential in the context of archaeological and geological heritage, the promotion of sustainable tourism in the study area is insufficient. In particular, the mostly-unpaved road network, difficulties finding personnel to employ, and inadequate local accommodation facilities are the most important factors that hinder the tourism potential of the area in question.

Thanks to the expansion of the “Open Air Museum Area”, (Figure7) which was partially created and redesigned in the Çayönü Tepesi Neolithic settlement, it will become an archaeo-tourism area where visitors can spend a longer time. The Neolithic period architectural tradition for the guests visiting this site will be made more understandable by selecting the most suitable building remains from the Çayönü Tepesi Cell Planned Building Phase and by starting the construction process following the original in the determined area. In addition, thanks to the display of replica tools to be exhibited in the exemplary building, it will also serve the visitors who come to this area to grasp the culture of about 10,000 years ago more easily. The implementation of the thematic exhibition area, which has been designed for the northeast area of Çayönü Tepesi, is an important application that would increase the interest of visitors to this area, thanks to both temporal presentation of excavation techniques and the visualization of some remains that could not be preserved in the area.

The Hilar Rocks are equally natural and archaeological sites that should be evaluated within the scope of geo-heritage. The natural shapes and stacks formed by geological processes are structures that have both scientific and educational value in terms of understanding the formation and changing process of the earth's crust; geological locations that improve people's mental and physical health and sensitive formations that need protection in order to be passed on to future generations and contribute to eco-tourism potential. Geological-geomorphological units, which constitute a valuable resource, constitute the basis of the geological heritage phenomenon, that is, natural assets that need to be preserved in terms of geology. In this context, the Hilar Rocks, an important geo-heritage and cultural heritage in the Southeastern Anatolia Region, fall under the scope of both geo-tourism and archaeo-tourism. Geo-tourism is defined as a concept that improves the tourism of a region by taking into account the geology, culture, heritage and well-being of the local people (Körbalta, 2018).

Apart from the physical or scientific nature of the geopark to be created in this area, it is an important location that will ensure the development of the region culturally and economically as it has international tourism potential, especially for the local people, in the context of geo-tourism.

## 6.Result

With the Çayönü Tepesi Open Air Museum Project and the Late Antique Age tombs and quarries unearthed in the Hilar Rocks, as well as the karstic shapes giving an identity to the natural protected area, the benefits were correctly

explained to the rural inhabitants of the region and “appropriation” was partially ensured. This tourism destination, which is seen as a door of hope by the local residents and positioned on the axis of archaeo-tourism and geo-tourism, has been supported and voluntarily preserved until today. Çayönü Tepesi and Hilar Rocks Tourism destination area is an important archaeo-tourism and geo-tourism area that will immensely contribute to the region both culturally and economically. As a result of the increasing level of cultural knowledge and the potentially positive effect of economic factors, it will also ensure that the local people living around the study area will be enriched in terms of intellectual awareness.

Tourism does not exploit the entire cultural and geological heritage as a touristic product. In planning the archaeo-tourism and geo-tourism axis of the cultural and geological heritage as a touristic product and taking into account the negative effects of tourism on this heritage, plans should be made to minimize the negative effects that may occur. One of the most well-known negative effects of tourism on cultural heritage is overuse of the heritage, and the other is misuse of the heritage site. Overuse mostly occurs as a result of too many tourists coming to cultural heritage areas with insufficient infrastructure, and it also leads to physical damage and destruction of cultural heritage over time. Misuse of heritage is the inappropriate behaviour of tourists in the field of cultural heritage. Considering all these positive and negative factors, planning projects and measures to increase the tourism potential of Çayönü Tepesi and the Hilar Rocks is critical for transforming these unique sites into a sustainable destination for future generations.

In this context, increasing the sustainable geo-tourism and archaeo-tourism potential of the region and increasing the number of both domestic and foreign visitors depend on the proximity to be established with sponsorships. There is more than one possible burial ground with the same characteristics as the rock tombs in the Hilar Rocks, of which only one chamber was opened. Archaeological excavations in these areas can increase the tourism potential and popularity of the area. In addition, there is a need for a sustainable conservation policy and specific steps to be taken in the Hilar Rocks, which contain unique karstic shapes.

The excavations in the world-famous Çayönü Tepesi Neolithic settlement, where scientific archaeological excavations have been carried out with the funds provided by various universities with the support of the state since 1964, need to be supported with sponsorships as well as government support to make it suitable for today's conditions and attract the attention of tourists. These supports are essential for the restoration of nearly 10000-year-old architectural structures under their original form, the preservation and display of the lime-clay base of the Terrazo Building, which is a unique architectural example, the expansion of the excursion tracks and increasing the variety of exhibitions. Archaeological excavations in the rock tombs on both Çayönü Tepesi and Hilar Rocks will increase the archaeological information of this destination area, as well as provide a visualization of the area in question and open different windows to the past of the region. It is extremely important that conservation and exhibition projects are developed or supported in coordination with the archaeological and natural potential of the area in question, and that they are sustainable.

Considering all these together, to both reveal the past of the region and present it sustainably, it will become an important destination area;

- Integrated projects should be developed and supported by preserving the original aspects of both areas.
- It is a priority to plan and implement protection measures.
- It is necessary to expand the excursion tracks by conducting archaeological excavations in new areas.
- Improving the infrastructure conditions in the destination area will facilitate transportation and thus increase the number of visitors to the area in question.
- To preserve and promote the unique karstic shapes and rock tombs on both Çayönü Tepesi and Hilar rocks, it should be aimed to increase the initiatives to be included in the UNESCO World Heritage List.
- Thanks to the steps to be taken in both areas within the scope of geo-tourism and archaeo-tourism, it will take the promotion of the region one step further and make serious contributions to the economy of the rural settlements in the region and be effective in the sustainable preservation of these geographical and archaeological values.

## References

- Altın, E. (1966). Geology of eastern and southeastern Anatolia. *Bull. Min. Res. Exp.*, 66, 35-77. <https://dergi.mta.gov.tr/index.php?id=arsiv>
- Arslan, R. (2010). Troia'da koruma uygulamaları ve ören yerinin sunumu. *Türkiye Bilimler Akademisi Kültür Envanteri Dergisi*, 8, 175-182. <https://dergipark.org.tr/tr/download/article-file/1356622>
- Atalay, İ. (2002). *Türkiye'nin Ekolojik Bölgeleri - Ecoregions of Turkey*. T.C. Orman Bakanlığı Yayınları.
- Bıçakçı, E., (2001). *Çayönü Tepesi. Untersuchungen zu den Bauten und Siedlungsmustern der akeramisch-neolithischen Subphasen 5 und 6*. Unpublished PhD Thesis, Institut für Baugeschichte, Universität Karlsruhe
- Çambel, H. & Braidwood, R.J. (1980). Çayönü Tepesi ve Hilar Mağaları 1979 Çalışmaları. 2. Kazı Sonuçları Toplantısı, 121-125.
- Cahyadi, H. (2016). Integrating Archaeo-Tourism with Geotourism Development in Bantimurung National Park, South Sulawesi Province. *Asia Tourism Forum 2016 – The 12th Biennial Conference of Hospitality and Tourism Industry in Asia (ATF-16)*, 547-52. <https://doi.org/10.2991/atf-16.2016.86>
- Caneva, I., Davis, M., Marcollongo, B., Özdoğan, M. & Dağistan-Özdemir, M.Z. (2005). Palmieri, A. M. (1993). Geo-archaeology in the Northern Diyarbakır Region. (Eds.: T. Mikasa). *Essays on Anatolian Archaeology-Bulletin of the Middle Eastern Culture Center in Japan*, VII, p. 161-168.
- Dadak, K. (2015). Yeni Kuşak Hak Olarak Çevre Hakkı, *Uyuşmazlık Mahkemesi Dergisi* 5, 309-326. <https://dergipark.org.tr/tr/pub/mdergi/issue/16885/175821>
- Dağistan-Özdemir, M. Z. (2005). *Türkiye'de Kültürel Mirasın Korunmasına Kısa Bir Bakış*, Planlama Özel Sayı, Uluslararası Alanda Kültür Varlıklarının Korunması. Alkım Yayınları.
- Durmuş, E., Çağlıyan, A. & Karadoğan, S. (2009). Ergani-Çermik (Diyarbakır) arasındaki kenar kıvrımları kuşağı ve çevresinin jeomorfolojik özellikleri, *e-Journal of New World Sciences Academy*, 4 (4), 4A0016. <https://dergipark.org.tr/tr/pub/nwsa-nature/issue/10853/130561>
- Erim-Özdoğan, A. (2007). Çayönü. (Eds.: M. Özdoğan & N. Başgelen), *Anadolu'da Uygarlığın Doğuşu ve Avrupaya Yayılımı*, Türkiye'de Neolitik Dönem, Yeni Kazılar-Yeni Bulgular, p. 57-97. Arkeoloji ve Sanat Yayınları.
- Erim-Özdoğan, A. (2011). Çayönü. (Eds.: M. Özdoğan, N. Başgelen & P. Kuniholm), *The Neolithic in Turkey - New Excavation and New Research*, The Tigris Basin. p. 185-269. Arkeoloji ve Sanat Yayınları.
- Erim-Özdoğan, A. & Yalman, N. (2004). Katkılı kil kaplar ve çanak çömlek: Çayönü Çanak Çömleksiz ve Çanak Çömlekli Neolitik bulguları üzerinden bir yorum. *Turkish Academy of Sciences Journal of Archaeology*, 7, 67-92. <http://dx.doi.org/10.22520/tubaar.2004.0007>
- Doğan, U. (2015). *Jeomorfolojinin Temelleri*, (Huggett, R. J., Fundamentals of Geomorphology, çeviri ed.: Doğan, U.). Nobel Akademi Yayıncılık, Ankara.
- Graf, İ.K., Bozcu, A. (2006). Yapısal özelliklerin lapy gelişimindeki rolü: Kızılörü Dağı doğusu (Korkuteli-Antalya). *Jeoloji Mühendisliği Dergisi*, 30, 9-16.
- Kazancı, N., Özgen-Erdem, N. & Erturaç, M. K. (2017). Kültürel Jeoloji ve Jeolojik Miras; Yerbilimlerinin Yeni Açılımları. *Türkiye Jeoloji Bülteni* 60/1, 1-16.
- Körbalta, H. (2018). Kula olkanik Jeoparkı Yönetim Planı" için öneriler. *Journal of Geological Engineering*, 42, 191-214. <https://dergipark.org.tr/tr/download/article-file/578489>
- Meşeli, A. (2005). Çermik ve yakın çevresinin morfografik özellikleri. *Dicle Üniversitesi Ziya Gökalp Eğitim Fakültesi Dergisi*, 5, 54-66. <https://dergipark.org.tr/tr/download/article-file/787254>
- Neche I.M. & Erdeli, G. (2014). Geolandscapes and Geotourism: Intergrating Nature and Culture in the Bucegi Mountains of Romania. *Landscape Research*, 40 (4), 486-509. <https://doi.org/10.1080/01426397.2014.939616>
- Özdoğan, M. (2010). Çayönü Tepesi: Çanak Çömleksiz Neolitik Dönem'e tarihlenen bir yerleşim yerinde koruma ve alan düzenleme uygulaması. *Türkiye Bilimler Akademisi Kültür Envanteri Dergisi*, 8, 141-154. <https://dergipark.org.tr/tr/pub/tubaked/issue/57432/814188>
- Özdoğan, M. (2006). *Türkiye Arkeolojisine Tarihsel Süreç İçinde Bir Bakış, Uluburun Gemisi 3000 Yıl Önce Dünya Ticareti*, (eds.) Ünsal Yalçın, Cemal Pulak and Rainer Slotta. 29-43. Deutsches Bergbau-Museum Bochum.
- Özdoğan, M., Özdoğan, A., Bar Yosef, D. & Van Zeist, W. (1994). Çayönü Kazısı ve Güneydoğu Anadolu Karma Projesi: 30 Yıllık Genel Bir Değerlendirme. *XV. Kazı Sonuçları Toplantısı*, 1, p. 103-122. T.C. Kültür Bakanlığı.
- Srivastava, S. (2015). Archaeotourism: An Approach to Heritage Conservation and Area Development: Case Analysis of Badoli Temples. *Global Journal of Engineering, Science and Social Science Studies*, 1(2), 31-42. (Available online at [www.gjesss.co.in](http://www.gjesss.co.in))
- Şahin, C. (2003). *Türkiye Fiziki Coğrafyası*, Gündüz Eğitim ve Yayıncılık.
- Şaroğlu, F. & Emre, Ü. (1987, April). Karacadağ Volkanitlerinin Genel Özellikleri ve Güneydoğu Anadolu Otoktonundaki yeri. *Proceeding of the 7th Biannual Petroleum Congress of Turkey*, April 1987, pp. 384-391.
- Tolun, N. (1962). *Diyarbakır Sheet:500.000 Scale, Explanatory Text of The Geological Map of Turkey*. MTA.
- Tuncer, B. and Bulut, İ. (2019). Arkeo-turizm potansiyeli açısından Çatalhöyük, *Journal of International Social Research*, 12 (64), 278-292. <https://www.sosyalarastirmalar.com/articles/atalhyk-in-terms-of-archeotourism-potential.pdf>
- Sayhan, S. (2014). Ergani (Diyarbakır) depresyonunda bazı morfolojik müşahedeler. *Türk Coğrafya Dergisi*, 33, 183-209. <https://dergipark.org.tr/tr/pub/tcd/issue/21254/228063>
- <https://korumakurullari.ktb.gov.tr/> Access date:01.07.2021