A traditional wooden corbelled dome construction technique from Anatolia. The Eastern Anatolian Tandoor house with its wooden “swallow-dome” type of roof

Alev Erarslan
Faculty of Architecture and Design, Department of Architecture, Istanbul Aydin University, Istanbul, Turkey

ABSTRACT
The traditional houses of the East Anatolian Region were basically a product of climatic conditions. The types of houses here reflect the region’s climatic conditions and display the same type of design in both urban and rural settlements. In response to the region’s long and severe winters, houses were kept closed to the outside, having thick walls, small windows with open and semi-open spaces (gardens, courtyards, sofas) that were also kept small. The kitchen was the throbbing heart of the house and the main element of design in its plan was a tandoor, in front of which the whole family assembled. The interior design of this space, with its corbelled roof of wood (locally called “kırlangıç roof or tüketikli roof” was the most characteristic element of the houses. The aim of this article is to present the traditional residential architecture of the East Anatolian Region and the kitchen that characterizes it, as well as introduce the most unique part of the kitchen—the lantern roof (locally, the kırlangıç roof or the tüketikli roof)—by offering examples to be found in the district of Gümüşdamlı (formerly Zargidi), Aydintepe, in the province of Bayburt, one of the main cities of the region.

1. Introduction
The type of covering generally known as a “lantern roof” is a type of roof that is made from building materials (usually wood or stone) that are overlaid one on top of each other. The basic technique used in the structure is “corbelling.” Another feature of these types of roofs is that the covering has an opening (light well) at its center in the character of a roof window that allows light and air to flow through. The roof covering, known in different cultures by various different names, is constructed using corbelling technique, in which square or nearly square, rectangular spaces are protected by an overhead covering that is built of pieces of wood or stone overlaid on top of each other diagonally, starting from the corners. The nomenclature for this structural element was first suggested by the scholar Albert von le Coq. In his (1925) work titled Bilderatlas zur Kunst und Kulturgeschichte Mittel-Asiens, le Coq used the terms “lantern roof” and “laternendecke,” calling houses with this type of roof, “laternen-roof houses” (Le Coq 1925). The lantern type of roof structure and the naming of this type of roof was also initially referred to by the well-known Austrian art historian Josef Strzygowski. In the book he published in (1930) titled, Asiens Bildende Kunst in Stichproben, ihr Wesen und ihre Entwicklung, Strzygowski introduced examples of these structures in Asia and called the covering “übereckung,” a word derived from

CONTACT Alev Erarslan aleverarslan@gmail.com Faculty of Architecture and Design, Department of Architecture, Istanbul Aydin University, Florya Yerleşkesi (Hailt Aydin Yerleşkesi) Besyol Mah.Inönü Cad.No: 38 Sefaköy-Küçükçekmece / ISTANBUL/TURKEY

To the memory of my parents, who had a passion for Bayburt.

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“überreck,” meaning “on the diagonal,” referring to the way roof elements were criss-crossed on the diagonal starting at the corners in the corbelling technique (Strzegowski 1913; Choi 2017).

Another early researcher of lantern roofs was the renowned German ethnographer Carl von Hahn. Hahn, in his article titled Kaukasische Dorfanlagen und Haustypen that was published in the journal Globus in (1896), looked into houses with “lantern-domes” in the Caucasus and used the term “hidden houses” to describe their characteristic feature of being buried in the earth (Hahn 1896). Other studies on the subject were conducted by Ole Olufsen and M. Aurel Stein. Olufsen, a member of the Danish military and an explorer, reported in his 1904 publication, Through the Unknown Pamirs, that this type of roof covering had been used in the houses of the Pamir Mountains, illustrating this finding with a photograph (Akin 1991). The British archaeologist and diplomat Aurel Stein wrote in 1912 in his work, Ruins of Desert Cathay, and in 1921 in his book Serindia, that houses with a lantern roof could be widely seen all over Central Asia (Stein 1921). He claims that the origin of this type of covering can be dated to Uygur houses (Stein 1921; Karpuz 1984). Josef Strzegowski also asserts that the origins of this type of roof date back to the cultural setting of the Turks of Central Asia (Strzegowski 1913; Strzegowski, Glück, and Köprülü 1979; Karpuz 1979).

Lantern-roof houses have been the subject of other research as well. I.S. Hallet and R. Semizay published a book on the Traditional Architecture of Afghanistan in 1980 and Karl Wutt produced a doctoral thesis titled Zur Architektur einiger Hindukush-Täler im Umkreis von Nuristan in 1978 for Vienna Technical University on this topic (Akin 1991). These types of houses are examined in these publications by means of their examples in Afghanistan, Hindi Kush and Nuristan.

The wooden corbelled roof widely seen in Daghistan, Georgia, Armenia, Azerbaijan, Afghanistan, Hindu Kush, Iran, the Caucasus and in Anatolia has been given different names in the vernacular tongue of the region it is a part of. In Georgia, Daghistan and Afghanistan, the covering is called the “darbazi-type”; it is known as darvaze in Persian, and is referred to in Azerbaijan as karadam because the entire roof is covered by the black soil emitted from the hearth or tandoor. In Armenian, it is known as hazarashen, which refers to its being made of “a thousand pieces” (Fischer 1974; Marutyyan 2001; Tscubinashvii 1959; Severov 1947; Akin 1991). These types of structures were called gikhatun, ton or tun in the Armenian Soviet Socialist Republic (Marutyyan 2001; Akin 1985, 1989). Russian archeologists today locally call this type of covering that is still used all over Central Asia the Balkhi vault (Masson, Pugachenkova, and Rogers 1980, 133). The term Balki here is associated with the city of Balkh in Iran (Akin 1985, 161).

This style of roof was used in many regions of Asia and in Transcaucasia since the Neolithic Era in houses known as pit houses (Chang 1968). Some scholars claim that the lantern roof house was a part of the Kura-Arax culture of Transcaucasia, dated to 3000 BC (Burney and Lang 1971; Sagona 2018; Sumbaze 1960, 1960a). In this culture, there are some circular houses with a stone foundation that are partially submerged in the earth (Sagona 2018). The roofs of the semi-subterranean houses in the lower settlement of Tsaghkahovit fortress in north-central Armenia, dated to the Late Bronze and Iron Ages, were built using corbeling technique. The roof construction features short beams laid parallel to the walls that have been placed diagonally at the corners. This arrangement is repeated at multiple levels until the roof narrows and an opening suitable for letting air and light in and out is formed in the center (Khatkadourian 2016; Martirosov 2012). The roof is covered with reeds or straw on the outside and plastered with clay and earth. The roof structure is supported on the inside with wooden pillars. It is known that wooden corbelled roofs were used in the round dwellings of the Shengavit settlement on the level dated to the 4th–3rd millennium BC (Marutyann 2001). The more prevalent use of this type of roof was seen in the houses of Teishebaini, dated to early in the first millennium BC (Marutyann 2001; Martirosov 2012).

The lantern roof-type of houses are also referred to early on in history by Vitruvius. In describing a Colchian dwelling, Vitruvius says that the Colchians lived in houses made of tree trunks because of the abundance of forests in the region close to Pontus, where they had settled. He relates that Colchian dwellings had stone walls and a domed wooden roof. He says that the main room of the houses had a crowned ceiling (Tsetskhladze 1999). Vitruvius describes the roof construction of the Colchian House as being made of whole trees that were laid out alternately to the right and left. A distance was left between the trees according to their length and then two trees were placed on the tips of the ones on the bottom at a perpendicular angle. These four trees defined the size and extent of the house. After this, poles were alternately mounted in the corners (Vitruvius 1990; Sumbaze 1960a).

Vitruvius points out that the most important part of these single-storied Colchian dwellings was the crowned ceiling. This crown-like structure was made out of horizontally placed wooden piles and appeared in the form of a steeple. Air and light was allowed to come in from an aperture at its peak. The crown is of a square, tetrahedral or octahedral shape. It hovers over a central hearth that accommodated a fire for warmth or for cooking. A bolstering pillar supports the crown, which is adorned with decorations and carvings (Sumbaze 1960a). The house’s columns, referred to as the “mother pillars,” are its most
important part as it is not only their construction that is striking but their contribution to the interior decoration of the structure (Tsetskhvladze 1999; Sumbaze 1960, 1960a). Archeologists have agreed with Vitruvius’ description in their acknowledgement that “swallow roof” houses were a part of Bronze Age Black Sea culture, which is a part of the Colchian culture (Burney and Lang 1971; David 1994; Sagona 2018). Xenophon in the 5th century BC described the houses of the region in his famous work Anabasis, in which he speaks of the return of the “Ten Thousand”: The houses were underground, their mouths were like a well but spacious below, with an entrance dug out for animals and also for wheat, barley, legumes and beer set out in jars (Marutyan 2001). These houses were semi-subterranean and Xenophon points to them as having corbelled wooden domes, or “lantern roofs.”

The lantern roof-type was a widely used form. Besides used in houses, the lantern roofs were also found in Buddhist temples (stupas), Buddhist rock tombs, Islamic crypts and Hellenistic tombs (Le Coq 1925; Kozicz 2011; Young 1956; Akin 1985). Examples of the lantern roof type can also be seen in the throne rooms of the Parthian palaces of the period running from the third century BC to the second century AD (Schippmann 1971). It is known that the splendid reception rooms of wealthy households of Panjakent, dated to the 6th-5th centuries AD also had wooden lantern roofs supported by four columns as in the Parthian palaces (Belenzitsky 1973). The Armenian patriarch’s palace in Dvin, dated to the 7th century AD, had three lantern roofs sitting on top of a rectangular salon (Matevosyan 1985). Other early examples of this type of roof can be seen in Buddhist rock temples. Dated to the 8th-6th centuries AD, some of the Buddhist rock temples and monasteries carved into the rocks have levels of coverings that resemble lantern roofs (Akin 1985). Also, rock tombs with this type of covering can be seen in Simsim, Kizil and Kiris in East Turkistan (Le Coq 1928). The lantern roof is also a tradition in the Shiva temples of India, which are dated to the 9th-8th centuries AD (Fischer 1973; Kozicz 2011). Paul Emile Botta writes that some chambers and halls of the Assyrian palaces in Khorsabad, instead of having brick vaults as believed, had wooden lantern roofs placed on rows of wooden pillars that were located near the walls, asserting as well that this type of roof is currently being used in the Armenian regions of the area as “Armenian lanterns” (Botta 1850; Rawlinson 1902).

The aim of this article is to describe the lantern roof-type of house (locally called tüteklikli house) that represents the traditional vernacular architecture of the cold climate zone of the East Anatolian Region, on the basis of examples from the area that the author has chosen as a pilot region – the village of Gümüşdamla (formerly Zargidi) in the district of Aydintepe, Bayburt. The article will first relate the geographical dispersion of the lantern roof-type houses in Anatolia, then delineate the general characteristics and variations of the houses, the types of lantern roofs used in these houses, as well as the effect of this type of roof on the indoor thermal environment. This will be followed by a review of the characteristics of the layouts of the lantern roof-type houses in Gümüşdamla (Zargidi), the types of roofs built and a description of the roof as part of the spatial arrangement of the kitchen. In the Discussion section of the article, a comparison will be made of the rural and urban examples of these houses as well as the differences between the examples found in other parts of Anatolia and those in the village of Gümüşdamla (Zargidi), the present area of study. This section will also include an analysis of the village houses in terms of socioeconomic status and a discussion of whether this status has been reflected in the various types of houses, roof variations, interior arrangements and elements of interior design. The discussion will also cover the different views set forth on why this type of roof has been preferred.

2. Methodology

A local application of the corbeling technique can be seen in the lantern roofs of Daghistan, Georgia, Armenia, Azerbaijan, Afghanistan, Hindu Kush, Iran and the Caucasus as well as having a wide representation as a covering system in Anatolia. The wooden corbelled dome-type houses known in Anatolian residential architecture as the tüteklikli house can be seen abundantly in East Anatolia in the regions of Van, Ağrı, Kars, Iğdır, Sivas, Tokat, Tunceli, Bitlis, Artvin, Erzincan, Erzurum and Bayburt. This type of roof is used in the kitchen in the houses of this region, this area being the main living space of the structure. The roof structure is designed using interior and other characteristic elements that are unique to this type of kitchen.

The aim of this article is to describe the swallow dome-type of roof used in the traditional houses of East Anatolia on the basis of various rural examples of typical houses in Bayburt, one of the most important cities in the region, and also one which has only been scarcely studied. In line with this aim, the author chose the village of Gümüşdamla (formerly Zargidi), the birthplace of her parents, in the district of Aydintepe in Bayburt, as a pilot region to examine the kitchens of the houses in the area and their roof structures. The author traveled to the region for this purpose in August 2020 and selected 18 old village houses to study, focusing on their layouts, the arrangement in the kitchen and their roof coverings. The goal was to examine structures with the type of covering mentioned here and to define their plans, kitchen arrangements, roof construction techniques, design and structural characteristics and to document these as part of the heritage of the area’s rural wooden
architecture so as to transfer this knowledge to future
generations and contribute to the literature. The sur-
veys of the selected houses were obtained and their
layouts drawn, after which the characteristics of the
roof structure and the functional uses of the spaces
were examined. In addition, various conversations
were held with the people in the village about their
use of the kitchen and concerning the roof covering
and the local names given to the different spaces.

3. Houses with a swallow dome-type roof in
Anatolia

The lantern roof-type wooden corbelled dome in
Anatolia is widely known, despite various regional
variations, as the “swallow dome/roof” (locally kirlangıç
roof/dome or tüteklikli roof). Some researchers attrib-
ute this nomenclature to the structure’s physical
resemblance to a swallow’s nest while other scholars
suggest that the name has been adopted because
swallows are in the habit of flying through the open-
ings on top of the roof to build their nests along the
edges of the wooden corbelling in the summertime.
Houses that have this type of roof are generally called
tüteklikli houses. The term “tüteklik” was introduced by
the well-known Turkish architect Sedad Hakki Eldem,
widely recognized for his works on the “Turkish
House.” Besides referring to a house with this type of
roof as “tüteklikli house,” he also uses the term
“tüteklikli roof” for this particular type of roof itself
(Eldem 1954). The word “tüteklik” derives from what
the Turkish nomads called “tünglük,” which referred to
the opening left on top of their “yurt” or tent to allow
smoke to be emitted and light to be let in (Akin 1985,
1991). The “tüteklikli” type of covering is mainly used in
residential architecture but also in Islamic monasteries
(tekke), dervish lodges (hankahs), the meydanevi
belonging to religious orders, as well as in other
religious structures such as mosques and mesjids. It
also has a wide representation in other types of build-
ings such as in madrasahs and hammams.

The earliest information about the swallow dome-
type of roof comes from Vitruvius. In describing
Phrygian domiciles, Vitruvius says that the houses
were built in semi-subterranean fashion on a slightly
sloping hill and that they were covered by a pyramid-
shaped roof that was made up of wooden logs woven
together with straw and reeds thrown over the roof to be
topped finally by earth. This technique caused the houses
to resemble very highly stacked mounds. In describing
the houses with a swallow dome type of roof. Vitruvius
said this design kept the houses very warm in winter
and very cool in summer (Vitruvius 1990; Akin 1985).

Another piece of written evidence on the existence of
the swallow dome type of roof in the houses of
Anatolia can be found in the works of Xenophon.
Xenophon described the houses he saw around
Malazgirt in the winter of 401–400 BC as conical or
pyramidal and shaped in wood. It is believed that
these were swallow dome-types of houses (Akin
1989, 1991, 1996).

This type of roof was also seen in Anatolia in some
burial monuments dated to the Hellenistic, Late
Hellenistic and Early Roman periods. These memorial
tombs were built of stone and marble and had cor-
belled domes. The memorial tomb in Milas,
Gümüşkalesen, the memorial tombs in Kirklareli, the
first cell below the Belevi tumulus, the Mudanya
Memorial Tomb, the double-cell tombs at Karalar and
the stone corbelled domes of Hamas Kirani tumulus
are the most well-known examples of these (Young
1956; Akin 1985).

The famous traveler Henry Fawhawe Tozer wrote in
his travel book of 1881, Turkish Armenia and Eastern
Asia Minor, that the plains of Bitlis and Muş were full of
semi-subterranean lodgings that looked like large

Figure 1. The subterranean houses on the Muş plains that Lynch described as resembling large ant-hills (Lynch 1901, Fig., 153).
anthills and had wooden roofs that were covered with earth. He said that the roofs of these houses had a sort of air-hole on top (tüteklik) (Tozer 1881). The author furthermore asserted that these houses resembled the ones Xenophon described as Armenian houses. Similarly, the English traveler Henry Finnis Blosse Lynch wrote a book in 1901 entitled *Armenia, Travels and Studies*, in which he described the houses in the villages of Muş and Bitlis as semi-subterranean large ant-hill-like structures, as Tozer had mentioned (Lynch 1901) (Figure 1). Lynch relates the characteristics of these houses as having earthen domed roofs with an opening at the top for light and ventilation.

Geographically speaking, houses with swallow dome-type roofs in Anatolia (we will hereinafter call these tütekli houses) are abundantly seen in Eastern Anatolia, Van, Muş, Ağrı, Kars, Iğdır, Sivas, Tokat, Tunceli, Bitlis, Artvin, Erzincan, Erzurum and Bayburt (Figure 2). Although tütekli houses seem to have more of a rural nature, they are also found in the cities of the region. The spread of these houses in the Eastern Anatolian Region coincides seamlessly with the tüteklik house that appeared in Asia and Transcaucasia. The houses are similar in that in both Anatolia and the other areas, the characteristics of their lay-outs, the construction technique used, the customary way in which the houses are used, interior elements and even the names of some of the articles used in the houses are the same (Akin 1985). The main characteristic of these houses is the wooden covering over the kitchen space (regionally tandrevi) and the “swallow dome” roof (kırlangıç dome) built with corbelling technique.

The tüteklik houses of the Anatolian rural are usually embedded in the ground to benefit from the natural heat insulation of the earth. The soil is a storage for solar energy. There are two ways in which the house can be embedded in the earth. In the first technique, the house is constructed in a ditch upon which earth is heaped. The house can be buried in the ditch completely as a whole or sometimes only half is embedded. The layout of such subterranean and semi-subterranean tüteklik houses is usually rectangular, with a square area equal to the short side of the form covered with a tüteklik roof while the rest of the space is covered by a flat roof (Akin 1985). The entire structure is then covered with earth, leaving open the tüteklik aperture. From the outside, the houses thus look like pyramids with a hole on top of each. The square area of the house covered by the tüteklik roof constitutes the main living space and has a tandoor right under the tüteklik. This area has shelves on the walls that carry kitchen utensils such as pots and pans. Covered by a tüteklik, this square area is adjacent to the rectangular portion of the space, used as a barn. Between the sitting area and the barn area are grain and flour barrels lined up in place of a separating wall (Akin 1985). The reason there is no wall is to take advantage of the heat produced by the barn animals. In fact, the animals and members of the household come in and out through the same door. The spaces the animals share with the household are actually heated with their body heat. Sometimes called barn-houses, these houses often have a platform (locally ahır sekisi) in the barn on which people can lie down.

In the second type of layout, which is more frequently applied, the back of the houses are buried into a slightly slanted hill with only the front of the house facing the outside. Rooms have been added to these “barn-houses” (Sinclair 1989). The houses consist of three sections—the living room (kitchen) with its tüteklik, the barn, and the room(s). The living room with tüteklik serves as a kitchen at the same time and the tandoor, used for heating and cooking, is located underneath the roof covering. There are 3–4 rows of carved shelves all along the walls of this room. This time however there are stoves in the room(s) to heat the spaces. The main living space (kitchen) with its tüteklik, together with the room or rooms added to the barn, represent an agglutinative rather than a planned system of layout. It is this square plan with its tüteklik that provides the central living space.
(kitchen) for the household throughout the year, especially in the wintertime. This is where food is cooked and eaten, bread is baked, and the members of the household sit as well as sleep. In fact, this is even where bathing takes place (Akin 1985). There are usually no windows in either type of dwelling.

The third type of the tüteklikli house that emerged in both urban and rural areas in Anatolia is the variation that is subterranean no longer but has a single story, or very seldomly, two stories, built on top of a ground floor and abides by a specific plan. This plan can even be found in the resplendent houses or mansions (konak) in the cities, which are characterized by a main living space with a tüteklik covering that serves as the kitchen and boasts of quite ornate interior decoration. Particularly in Erzurum, one of the more prominent cities in the region, mansion-like houses (konak) that have a kitchen with tüteklik stand out characteristically (Karpuz 1984). The structures in the city have been placed under protection since the 1970’s. These houses always have a circulating space (sofa/courtyard). There is a small vestibule on the ground floor and on the left is a large kitchen area (tandrevi) that holds an outsized hearth with a tandoor covered by a roof with tüteklik (Figure 3). The interior arrangement of the kitchen space is the same in each house. Beside the tandoor are shelves to put pots and pans and there is a seki (platform) for sitting that has a wooden balustrade along with niches along the walls. The famous traveler Robert Curzon wrote after visiting the houses of Erzurum that the ceilings were shaped by beams in the form of a low pyramid. He also related that there was a square window on the roof covered with waxed paper (Curzon 1854; Karpuz 1984).

3.1. Roof construction

The construction of this type of roof is basically the same in both rural and urban areas in Anatolia as far as plan and aperture function is concerned. Swallow-dome roofs are used as a covering over square or nearly square spaces. If the space is rectangular, there may be two swallow-dome coverings over the space. There is an opening (lantern) at the center of the dome of this type of roof to let smoke out. The aperture serves as ventilation and is also the main source of light for the space. This is why it is called “light well” (locally ışıklik/tüteklik). The ışıklik/tüteklik has a wood-frame window. To make sure that the homeowner would not have to go up on the roof to open or close this window, a reel or pulley is attached to the window so that it can be opened and shut from down below. The tandoor is situated right in the center of the space underneath the roof or in a corner. It is used for cooking or for providing warmth.

The tüteklikli covering is supported by an initial row of wooden posts (locally direk). Wooden beams are then placed at the wall corners on the diagonal such that the corner openings are made smaller. This technique is called kareleme or “squaring.” The next step is to set down beams parallel to the walls as a second row on top of the corner beams. Thus the combination of the alternately placed crossing and parallel beams allow the construction to settle into each other, after
which the structure continues to be raised up until the top, where the edges form an approximate square form of about 50 cm (Akin 1991).

There are two main types of tüteklikli covering widely used in Anatolia. These are called “square” and “octagonal” tüteklikli coverings. In the square type of...
tüteklikli covering, the edges of the square substructure are supported by the mid-part of the crossing corner beams. This arrangement thus consists of an initial four beams forming a second square that is turned at a 45-degree angle, the construction continuing in this way upward with the squares gradually becoming smaller (Figure 4A and Figure 5A) (Akin 1991). This first type then is formed of a pyramidal arrangement of squares turned at a 45-degree angle.

In the octagonal tüteklikli covering, the supporting elements for the crossing wooden beams are closer to the corners as the square substructure is turned into octagonal form. The construction steps from this point onward are the same as in the square formation. The corbelling formed from beams that are parallel to the wall and crossed over alternately, gradually diminishing in diameter, is the next step (Figures 4B and Figure 5B). Because each octagonal form in this type is closed off by parallel or crossed beams, the tüteklikli covering is made up of more corbelling layers and is closer to the dome (Akin 1991). In this type, the dimensions of the wooden corbelling are long in the beams parallel to the wall and short on the diagonals. The tüteklik in the middle of the roof is sometimes square and sometimes in the form of an octagon (Figures 4C and Figure 5C). The number of corbelling layers in both types varies according to region but is usually 5, 7, 9 or 10. The construction of the original form of the tüteklikli roof does not make use of nails.

Outside of these two main types, the Anatolian tüteklik house also reveals various other types of kırlangıç roof. The first of these is the kırlangıç roof of an octagonal form inside an area squared at the corners. In this type, however, the wooden corbelling is not laid out on top of each other but instead lies parallel to each other. The tüteklik (ışlık) is in the form of a square (Figures 4D and Figure 5D). In another sub-type, a kırlangıç dome in the form of an octagon is constructed with short wooden corbels set inside the corners of a square area (Figures 4E and Figure 5E). The corbel lengths are equal. In this type, the wooden corbels are set to overlap alternately parallel and diagonal to the wall. The tüteklik in the center is octagonal. In yet another type, this time short wooden corbels are laid down to overlap in alternately diagonal and parallel form inside a twelve-sided area contained in the corners of a square area (Figures 4F and Figure 5F). In this type, the tüteklik in the middle of the roof is circular. In these sub-types, the roofs are almost dome-like.

### 3.2. The effect of the roof on the winter indoor thermal environment

The continental climate of the region of Eastern Anatolia means a cold and strenuous winter. The winter is long and harsh. Snow generally begins to fall in October and continues up until the middle of May. The average winter temperature throughout the region is −30°C (Akin 1996). The reason for the preference for the type of roof described here is fundamentally in response to weather conditions. The tandoor that is situated right under the roof in the center of the room or in a corner is where the whole family gathers together during the long winters. It is very important for the household that not the slightest warmth is wasted. In fact, full advantage is even taken of smoke from the fire before it is emitted through the flue, the intention being that the smoke from the tandoor is kept in the room for a while so that maximum benefit may be gleaned from its heat. The technique of heating by means of smoke is an interesting solution that was born in this region due to the severe climatic conditions (Strzgowski 1930). The heated air hovering over the tandoor rises to form a warm air barrier over the kitchen. The heat rising alongside the smoke accumulates in the concave wooden corbels of the roof, remaining inside for a long while to heat the space below. The heat and smoke collected in the wooden corbelling is slowly emitted through the aperture (tüteklik) in the middle of the roof (Akin 1985, 1989).

This domestic heating system is facilitated by the conical form of the roof, which allows the smoke and heat to settle into the corbelling, providing a heat barrier. Because of the smoke, the walls of the room and the inside of the roof are covered with a thick film of soot. Thanks to the wooden corbelling, the room heats up with the warmth of the smoke and preserves the heat for a prolonged period of time. These types of roofs, however, have been raised to a height of 7–10 m. to ward off smoke poisoning. This is why the corbelling consists of at least 5, 7, 9 or 10 rows of corbelling. To avoid heat loss, this area is generally without windows. In rare instances where there are windows, the type of window preferred is the concave grille window that allows a minimum of heat to seep out. The soot and the absence or scarcity of windows makes the room considerably dark. Another measure taken to avoid heat loss is the technique of constructing thick walls.

### 4. Traditional Gümüşdamlı (Zargıdı) village houses

#### 4.1. Plan types

Bayburt province is a fortified city located in the northeast of East Anatolia. On the east lies Erzurum, on the west Gümüşhane; Trabzon and Rize are to the north and to the south is the city of Erzincan. The Çoruh River passes through the city; the altitude is 1556 m. above sea level. The city was established by the Hurrians and was later ruled successively by the Urartus, the Kingdom of Pontus, the Roman Empire, the Emevis, Byzantines, Seljuks, the Akkoyunlu tribal confederation...
and finally, the Ottoman Empire. Evliya Çelebi mentions the city in his well-known travel book Seyahatname as “Bayyurt,” meaning “wealthy homeland” (Özen and Akgün 2019). With its continental climate, the city’s lowest temperature in winter is −26°C (Uçar 2018). The area suffers severe winters and in the summer and fall, there are huge differences in daytime and nighttime temperatures (Akgün 2013). Snow falls during the long and severe winters, lasting on an average from October to the middle of May. The city is beset by frost all through the year except for July and August.

Dede Qorqud/Korkyt Ata, the hero of the folk culture of this area, is one of the most well-known personalities in the region. As a member of the Kayı Tribe of the Oghuz Turks, he is known for his lauding of the ways of the nomadic Turks, passing on his wealth of knowledge of the traditions and mores of life on the steppes, as well as his talents for storytelling, epic poetry and music. Dede Qorqud’s stories are still passed on from generation to generation in the region and in 2018, UNESCO included him in its Non-material Cultural Heritage listings. The main sources of the economy in this city, which lies along the historical itinerary of the Silk Road, are agriculture and animal husbandry. Products of Bayburt and its villages include wheat, barley, ground wheat and ground barley, millet, lentils and beans. The region also boasts of gardens and orchards where fruits and vegetables are grown. Besides agriculture and animal husbandry, the city’s other economic activities include beekeeping and trout production. Textiles is another area that is among the economic branches that stand out in the city and its environs. The production of kilims, ehram (women’s traditional apparel unique to Bayburt and its villages), and prayer rugs particularly stands out. Outside of the city center, Bayburt has two districts—Aydıntepe and Demirözü. In his Seyahatname, Evliya Çelebi described 17th-century Bayburt as a city where there were about 1000 earth-covered houses with wooden roofs situated beneath the western gate of the city fort; he

Figure 6. Gümüşdamla (Zargidi) village (Google Earth).

Figure 7. Village houses in the region, built in the stone masonry construction system from local stones.
characterized these as semi-subterranean swallow-dome dwellings (Uçar 1998).

Our pilot village of Gümüşdamla (formerly Zargıdı) is one of the 23 villages tied to the district of Aydıntepe, Bayburt (Bayburt Valiliği 2020). Settled on flatland, the area displays collective settlement, where the village houses have been arranged around the mosque and the Village Chamber is in the center of the village (Figure 6). The Village Chamber hosts visitors to the village and also organizes weddings and funerals. There is a stream (arık) flowing through the village in front of the houses which serves an important function in the daily life of the village.

The continental climate prevailing in the village has made stone architecture, and sometimes rare examples of mudbrick, a dominant feature of village building. Rocks found locally in the area are the materials utilized. These include tuff, travertine, limestone, sandstone, andesite and freestone. The exteriors of the houses are made from a mix of local stones and dry-rubble. The interior walls are of sun-dried bricks. Smoothly cut stones are used in the corners of the walls (Figure 7). The houses are constructed in the stone masonry system with reinforcement beams of wood supporting the walls at intervals. The outer walls of the house have a substantial thickness of about 1 meter. The thickness of the walls is to prevent heat loss in the severe climate of the region. The windows of the houses are concave apertures with a grille of a dimension of 50 × 50 cm. that help to reduce heat loss. Although the organization of the houses usually comprises a single story over a ground floor barn (dam) or hayloft (merek), there are some houses that are laid out on only a single floor. The houses in the area are surrounded by garden walls that are locally called kanat. At the entrance of the house is a long and

Figure 8. Upper floor plan type with Selamlik. (Author).

Figure 9. Examples of plan type with Selamlik. The storage closet (yüklük) underneath the Selamlik. (Author).
Figure 10. Section of Selamlık. (Author).

Figure 11. Plan type interior Sofa
narrow passageway that has been kept small because of the climate; in the region, this is called havlu/avlu or aralik. Villagers will also call it sofa. Located on a sloping hill, some of the houses are semi-subterranean at the back. The flat earth covering of the houses (dam) is at the same level as the road in back. The back of some of the houses on the other hand are completely buried in the earth and function as a retaining wall. The use of this technique can also be explained by the effort to take advantage of the insulation provided by the soil in the challenging weather conditions of the region.

The design of the village houses makes them closed to the outside elements due to the climate. There are four main layouts in the houses. When examples carrying the same plan characteristics are examined, it can be seen that despite various small differences, the layouts are in general similar and have common proportions and dimensions.

The first of these is the most common type of layout that is called the “type with selamlık.” This plan is arranged around a single story above the ground floor; the house contains the main living space of the kitchen and an intermediate floor that contains what is called the selamlık (Figure 8). Entrance to the house is usually through a long and narrow corridor (havlu, aralik). There are however examples where the entrance to the house is through the main living space of the kitchen. The selamlık is the section of the house that is reserved for the use of men; it is accessed by means of wooden stairs that lead from the kitchen. Wooden balustraded galleries accessed by wooden stairs are called selamlık in the region (Figures 9, Figure 10). The selamlık can be located on one side of the house or on three sides. Two rooms open out into this space. The room that is wider than the selamlık is the main room (başoda). The room adjacent to the başoda has an ehram loom. Selamlık areas have windows that look out into the kitchen. In the houses of landowners (aga), the selamlık is where the aga eats, sleeps, and sits and also the place where esteemed male guests are entertained. The lower part of the selamlık is called yüklik and is used as storage space. The area outside of the selamlık is where the household engages in daily activities, which is the main room of the house—the kitchen. Sometimes there can be a room situated at one corner of the kitchen that is referred to as the winter room. This is also the space where guests are entertained in the wintertime. In this type of

![Agglutinative plan type (mixed plan type)](image)

*Figure 12. Agglutinative plan type (mixed plan type). (Author).*
plan, the barn (dam) and hayloft (merek) are on the ground floor.

The second type of plan used in the village is the type that contains the “interior sofa.” This is a quite common type of plan in Anatolia and in this layout, there is a sofa in the form of a narrow corridor in the middle of the house (Figure 11). This type of sofa is called göçlük by the locals. On one of the long sides of the sofa (göçlük) are two adjacent rooms; the kitchen is on the other long side. Access to the house is from an entrance (havlu/avlu) in front of the sofa. At the end of the sofa (göçlük) there is sometimes a stockroom (kiler). The sofa (göçlük) acts as a connection between the spaces in the house but besides providing circulation, it is a place to sit during the summer and make coffee. The back of the sofa has no windows. In this type of plan, the barn (dam) and hayloft (merek) are on the ground floor.

A third type of layout used in the region consists of a kitchen in the front part of the house with a winter room reserved for women and in the back, a barn (dam), hayloft (merek), with manure (locally tezek) produced by stock animals and used for fuel, kerme (fuel from the manure of smaller farm animals), and a firewood bin (Figure 12). This type of plan is known as the “agglutinative plan type” or “mixed plan” and features a direct entrance into the kitchen of the house. The barn is at a higher level than the house itself. In this type of plan, the barn (dam) covering can be of the swallow-dome type. This is due to the
presence of the light well (tüteklik) in the center of the covering that allows ventilation and provides a source of light.

In the fourth type of plan in the village, the house consists only of one space, which is the kitchen. This “single-room type” features an entrance directly into the kitchen (Figure 13). In examples of this type of layout that consist of two stories with one floor situated above the ground floor, there is a room above the kitchen on the ground floor. In this type of plan, the barn (dam) and hayloft (merek) are on the ground floor.

4.2. Kitchen space (ev/yerevi)
The most prominent room in the houses having this type of layout in the village houses of Gümüşdamla (Zargidi) is the kitchen. In the tüteklikli house in East Anatolia, the kitchen is generally called tandirevi. But, the kitchens of Bayburt and its villages are called “home” (locally ev/yerevi). This space in the house is the center and heart of household activity. Depending upon the topographical nature of the land on which the house stands, the stone exterior of the house is sometimes completely buried in the ground. The exterior walls of the houses that are on flatland however are in the open. The kitchen,

Figure 14. Right: Water fountain (kurun). Middle: Kehriz stone (çayırt). Left: A kehriz stone (çayırt) in the middle of the yerevi.

Figure 15. Shelves (terek) along the walls in yerevi.
with its floor of earth, is the main living space of the house and it is accessed sometimes from the ground floor or sometimes with stairs if it is below the level of the entrance (Figure 8). In its role as the main living space of the house, the kitchen serves the multifunctions of being a place to sit, sleep, rest, cook, bake bread, store, wash dishes and laundry, and even to bathe, eat and entertain. In these houses where large families live, the multifunction place where the tandoor is situated is where the entire family meets to spend the long and cold winter season and the area that provides a solution to heating the house. The ground floor where the kitchen is located is known as the “haremlik.”

The kitchen is also the largest section of the house. The dimensions of this space in the type with Selamlik is about 6 × 7 m., 4 × 7 m. in the type with interior sofa, and 3.5 × 7 m. in the agglutinative type. The single-space type is around 4.5 × 9 m. The kitchen in the region consist of two sections—“ev (home)/yerevi” and “tandırbaşı.” The first of these, the ev/yerevi is the larger main section of the kitchen. This is the section that stretches from the entrance to the tandırbaşı and it is traditionally either square or in rectangular form that is almost a square (Figures 8, Figure 11–13). The ev/yerevi is the largest, highest and most frequently used part of the house. Right in the middle of the space is what is called kehriz stone or çayıtaşı, which is a white-colored piece of stone or marble with a hole in the center (Figure 14). This piece of stone is placed beneath the light well (tüteklik) of the roof and serves as a dish-washing area. This is done so that enough light comes in to make sure that the dishes are washed clean. The stone also acts as a drain to capture the rain and melting snow that may come in from the roof in order to prevent the water from flooding the house. The kehriz works as part of the sewage system.

On sometimes one or sometimes two walls of the ev/yerevi section of the kitchen, there are decorative wooden shelves called terek arranged in four or five rows. The terek shelves are divided into three by wooden posts locally called direk that support the roof (Figure 15). Terek shelves rise up in total to a height of 3–4 m. and they are generally arranged in 5 rows. The lowest shelf (terek) has a depth of 1.5 m. while shelf spacing for the shelves above that is 25 cm. (Karpuz 1984). The shelves (terek) are arranged so that copper and enamel trays (sini) can be placed on the top, while on the middle shelves are placed enamel and copper plates, pans, bowls, pots, pans with lids (sirpoş), yogurt containers (seyran parhaç). The lowest shelf, which is the one that has the most ample space and is called tecir in the area is the place where dry goods such as dried beans and chick-peas are kept, as well as earthenware for storage, called zap and tekir, enamel cauldrons, plastic cheese buckets and metal jugs (Figure 15). These containers are used for storage purposes and are receptacles for legumes, cracked wheat, melted butter, honey, pickles and other edibles. The shelf at the bottom of the rows of terek, called tecir in the region, is 0.30 m. from the floor. The women of the region are very conscientious about keeping the terek tidy and vigilantly keep their copper and tin pots and pans polished and shiny. A part of the yerevi is used as a pantry where fruits and vegetables dried out in the summer months are placed in storage to be used in the winter. In some of the houses in the region where the yerevi may not have shelves (terek) along one wall, there is a balustraded platform or seki that is accessed by one or several steps. This is the private space where the female guests in the house are entertained.

Another interior element in the ev/yerevi section of the kitchen is located on the wall opposite the wooden shelves (terek) and consists of storage cabinets of wood or metal (ambar) in which wheat (gendime), flour and noodles are kept (Figure 16). These storehouses are to be found in the coolest and darkest part of the yerevi. The bread storage box of the household is placed on top of these storehouses. Another
The interior feature of the yerevi is the stone basin and fountain (kurun) that stands in the corner for washing the face and hands (Figure 14). Water runs into this basin directly from the mountains via pipes. In some houses however, water is carried to the house from street fountains.

The second section of the kitchen (yerevi/ev) is in the corner, usually across from the entrance, where the tandoor can be found. This is a smaller section and is called tandırbaşı in the region (Figures 8 and Figures 11–13). The floor here is generally made of “saltaşı,” or flat plates of stone, and is at a level of 30–50 cm. higher.
than the main space (ev/yerevi) (Figure 17: Right). The tandırbaşı may have one, two or even three tandoors (Figure 17: Left). The area is bigger as there are multiple tandoors. The larger tandoor is usually lit up once a week when bread is to be made or the laundry is to be washed. The smaller tandoor is used for daily activities such as heating water and cooking. Beside the tandoor are the tandoor vent-holes that are called külve (Figure 17). The number of tandoors in the house depends upon the economic status of the household. There are niches inside the mudbrick wall bordering the tandırbaşı to put objects on (Uçar 2018). The front of this space may sometimes be decorated with a wooden arch (locally ocak gaşı) (Figures 17: Right and Figure 18). The reason for the arch is to keep smoke from being dispersed into the rest of the house when the tandoor is burning. The locals call this location tütsülük. There are however examples of

**Figure 20.** Smoke and heat diagram.

**Figure 21.** Section of the wooden columns (direk) carrying the roof.
tandırbaşı that do not have arches. On top of the ocak gâş is a molded shelf that is used to put plates and other kitchen items (Figure 17). The reason the tandoor and tandırbaşı are inside the house is the severe winter conditions in the region. The tandoor also serves to heat the floor. The warmth of the floor spreads out into the interior space. The tandırbaşı is where the members of the household gather together to sit and get warm. On winter nights, legend (Dede Qorqut) has it that stories (locally hekat) are told here. People in the region believe the smoke emerging from the tandoor represents the house and the family living in it. Sometimes the tandırbaşı has a section in it for sitting and sleeping. This section is called sekû in the local dialect. There are examples in some houses, however, of the tandoor being outside the house, where it is called tandemlik (Figure 19).

The pyramidal form of the tandırbaşı shaft acts as a smokestack. The conical (or pyramidal) form of the roof allows the roof to act as a chimney that emits the smoke. The waves of warm air or heat and the smoke spreading out from the tandırbaşı form a warm air barrier to the yerevi section of the kitchen. The rising smoke and heat accumulate in the concave wooden corbelling of the kırmanç roof, which is the covering over the yerevi, allowing the heat to remain in the space and keep it warm for a long time (Figure 20). The combined smoke and heat accumulated in the wooden corbelling slowly leaves the space and weaves its way from the shaft at the center of the tükleklik/dome roof.

4.3. Covering over the kitchen

The covering system of the kitchen in the traditional village houses of Gümüşdamlı (Zargil) is the tükleklik/dome roof. Both in the main area of the kitchen (ev/yerevi) and in the tandırbaşı, there are various types of kırmanç/tükleklik-dome types of covering. The local name for the kırmanç/tükleklik-dome roof in Bayburt and its villages is kirman/kirman (we will call this kirman/kirman hereinafter). The people of the region relate that these types of roofs were produced very early on by Armenian builders and then by Turkish master builders who had been their apprentices.

The larger, square or nearly-square rectangular area of the kitchen known as “ev” or “yerevi” has a kirman covering over it. The kirman roof is carried by wooden posts that are called “direk” in the region (Figure 21). The roof is built with wood logs of a dimension of 20x20-15x15 cm that are called “goût” in the region. The kirman covering is constructed without the use of nails, using a technique where the pieces of wood are locked into each other by means of grooves that are called kert. On the top of the kirman is what is called a “pigeon chimney” or “fot’ chimney in the shape of a square (tükleklik) that has a pull-down shutter manipulated with a rope and pulley system from below. The rope is tied to a post on the lower level. Sometimes a railing is attached to this chute as a deterrent to burglars. It is this chute that provides the house with lighting and ventilation. The chimney is a little higher than the roof itself and forms a small dome. Underneath the chimney, in the exact middle of the yerevi, is the kehriz stone or çaytaşı, the most illuminated part of the house. This area contains a white-colored piece of stone or marble where dishes are washed and the place where the melted snow and rain seeping down the chimney is caught before leaking into the house (Figures 14 and Figures 18: Left).

Four different types of kirman covering is used in the main area of the kitchen (ev, yerevi). The square kirman is the most common type and the octagonal kirman placed right at the center of the roof constitutes the other group of roof coverings (Figure 22). The shelves (terek) of the yerevi and the wooden corbelling of the kirman roof as well as the light seeping through the tükleklik provide a magnificent plastic effect in the configuration of the kitchen space.

![Figure 22. Types of kirman and pasin coverings over the yerevi and tandırbaşı.](image-url)
The *kirman* is the type of covering most commonly used on top of the *yerevi* section of the village kitchen; the most common type of *kirman* used in the houses with *tüteklık* is the octagonal *kirman*, where the supports...
of wooden cross-beams are placed closer to the corners, thus forming an octagon (Figures 22B and Figure 23). In this type, the wooden beams are set into the corners, forming an octagon on the bottom row. The second wooden beam is set upon the first row and stepped inward (corbelling) until the octagon turns into a square. In the third wooden beam, again stepped inward (corbelling), the area this time turns back into an octagonal shape. This process repeats itself in this way. The corbelled roof covering finally ends in a square light well (ışıklık/tüteklik) (Uçar 1998). Because each octagonal form in this type is closed off by parallel or crossed beams, the tüteklik covering is made up of more corbeling layers and is closer to a dome-shape (Akin 1991). Another type of kirman that is widely used is the square kirman, which is made up of squares rotated at 45-degree angles (Figures 22A and Figure 24). In the square type of kirman, each square is rotated by 45 degrees over the one below and the kirman consists of gradually rising levels of tapering squares (corbelling). In both types, usually built with round or sometimes rectangularly cut beams, the number of corbelled rows vary between 5–9 in the region. The heat and smoke emanating from the tandoor is made to remain in the space by the kirman covering, which is for this reason built at an elevated height so that the household will not be affected by the smoke emitted from the tandoor. The kirman consists of 5–6 wooden corbels (beams) and the height of the yerevi in the type with Selamlik is on average 9 m, while it is on average 6 m in the other plan types.

Besides these two main types, another type of kirman used in the yerevi is the group of octagonal kirmans that have a lamp installed in the center. Inside the first kind of the octagonal kirman covering, what is called a “pasin” covering has been installed right at the center (Figures 22C and Figure 15: Bottom right and Figures 25: Left). Taking its name from the district of Pasinler, Erzurum, from where it originated, the “pasin” covering is used not only in kitchens but also in rooms and barns (dam). Built in the corbelling technique, the pasin covering has a square opening at the center (ışıklik/tüteklik) and because of this is considered a swallow-dome type of roof. It has a concave, conical form that narrows toward the center as it rises. Right in the center, as in the swallow-dome roof, there is a framed window opening (ışıklik/tüteklik) to let smoke out and light and air in. This window has shutters that open and shut, as in the kirman roof. In the region, the opening is called fot bacası. Pasin coverings can be slanted toward all sides or slanted toward one or two sides. The reason for providing this slope is to make sure that rain and melting snow is channeled out of the house without seeping inside. The main structure of the Pasin covering is usually made from beams of willow tree logs. This technique, in which the logs are interwoven by corbelling, is called “kirişleme”. Thin willow branches are placed between the logs while slimmer logs and bushwood are arranged on a vertical plane. The roof is completed by spreading out earth across the structure. There are also examples of a Pasin covering made from beams in the form of wooden planks.

In another type of kirman roof used in the region, sliding wooden planks have been placed toward the center of the octagonal kirman covering (Figures 22D and Figures 25: Right). Called a “flat octagonal kirman,” the window (ışıklik/tüteklik) in the center of the roof in this type is rather wide and has a sliding mechanism.

All of the kirman types rest on T-shaped wooden posts (direk) that have been adjoined to the wall at certain intervals (Figures 9, Figures 15, Figures 18, Figures 21, Figures 23–25). These posts (direk) are made from juniper and their crowns carry vegetal or geometric patterns. The trunks of some of these wooden posts have motifs resembling teeth (Figure 18). In some, there are symbols inscribed that are believed to
ward off the evil eye and malicious spirits. The thickest direk symbolizes the mother-in-law in the household and is named keyvane, a word that village folk use to mean “skillful and ingenious.” The wooden posts (direk) also form an area that the household uses to perform various rituals. In the interviews held with some village elders, we learned that when a child was born, the baby would be carried around the posts (direk) three times and that during the Feast of Sacrifice, the sacrificed animal would be slaughtered at the direk. The same symbols are seen in the Darbazi houses of Georgia and in the Gikhatun houses of Armenia, where these types of dwelling were also built. The main wooden posts carrying the roofs of these houses are known as the “mother” columns (Marutyan 2001). In the Darbazi houses, they are known as “dedabodzi.” The wooden columns (direk) are also believed to represent the Cosmic Tree or Tree of Life (Marutyan 2001).

All of the kirman coverings in the region are made from square or circularly cut pine (especially elms,
roofs

Anatolian Eurovillage (Akgün 1984). The roofing is made of juniper and other fir trees). The corners of the kirmanc dome covering are closed off with leftover pieces of wood and shavings. Medium-sized stones are placed on the corners to provide added weight. Then the area is covered with moistened earth at a thickness of 30–40 cm. and then plastered over with wet clay and sand. The earth is then flattened with a stone roller. A stone roller is a stone cylinder that is used on earth roofs (dam) and roads to flatten the surface. In Anatolian villages, it is used to compress the earth on the roofs of earth-covered houses (Figure 26). The compression prevents rain water from seeping through the roof. After this procedure, rock salt is piled over the earth to thicken it and prevent it from sliding when it becomes wet from winter conditions.

On top of the tandırbaşi, where the tandoor, or second section of the yerevi stands, the roof is made of various types of pasin coverings (Figures 22E-H and Figure 27, Figures 28). The covering to the tandırbaşı consists of a wooden arch (ocak gaşı) that is made by narrowing the opening to the hearth opening by corbelling. This is done by building a narrowing and concave opening consisting of round cross-sections of wood of a diameter of 1.2 m. This section is called “domuzluk” in the region (Karpuz 1984). The tandoor shaft is built from wooden beams and logs or planks set against these beams in perpendicular fashion. The tandoor shaft is in rectangular or square form and is called tandoor “bacası” in the local dialect. Here again, a system of pulleys is used along with an opening and closing shutters (hepen). The shutters are closed to keep the tandırbaşi warm at times when the tandoor is not in use (Akgün 2013). The beams that make up the “tandoor bacası” are closed off from the outside with earth. The rope tied to the shutter of the shaft of the tandırbaşı covering is tied to one of the posts standing around the tandırbaşı. The post separating the ev/yerevi from the tandırbaşı stands at the corner and is called gelin direği (bride’s post) in the local dialect. It is in front of this post that visitors coming to see the bride brought into the house by the bridegroom are seated. This tradition is called süzülme (inspection) in the region.

5. Discussion

The tüteklikli houses of the area of Anatolia that is known as the East Anatolian Region represent the traditional vernacular architecture and have appeared in response to the harsh climatic conditions in which the people of the region were forced to endure. Due to the severe and long winters, houses needed to be closed to the outside elements, have thick walls, small windows and were required to build their open and semi-open areas such as courtyards, gardens and sofas in small dimensions. The heart of the house and the main element of its design was the kitchen, where the entire family gathered and where the tandoor, representing the unity of the family, was located. The covering system for the kitchen space is the tüteklikli dome built in the corbelling technique, which is the most characteristic feature of this type of dwelling.

All over Anatolia, in both rural and urban examples of the tüteklikli house, the program of design for the kitchen (usually called tandirevi throughout Anatolia) is similar but some differences can be observed. In more urban examples that have been more extensively researched, it is seen that the houses are not subterranean and the interior splendor of the kitchen and the general workmanship of the house is on a par with the grandeur that would be expected from a city dwelling. At the same time, in urban examples, the kitchen space where the tandırbaşı, the place that features the tandoor, is located, also has an additional small hearth (Figure 3).

Rural examples of this type of house have not undergone as much research as the urban houses. In the areas of Muş, Tunceli, Tercan and Van, where there are examples of tüteklikli house, the main section of the house is the kitchen (tandirevi) with its kirlangıç dome.
As in all tüteklikli houses, this space is a multi-functional area where the family cooks, eats, bakes bread, sits, rests, entertains guests, keeps warm and otherwise takes part in all of the functions of daily life. Again, as in all tüteklikli houses, the interior elements of this space include the tandoor, wooden or metal storage bins for flour and wheat, and shelves for pots and pans. In the examples in the areas mentioned, the kitchen is the predominant feature of the house, a place where the family eats, bakes bread, keeps warm, gathering to chat, communicate, exchange ideas and culture, have discussions and talk about

![Figure 29](image_url) A tüteklikli house where the tandoor is just below the kırlangıç roof. Muş Gökyazı Village.

![Figure 30](image_url) Graph showing proportional use of the different types of kirman roof in the village of Gümüşdamla (Zargidi).
Table 1. The location, construction year, plan type, roof type, socio-economic position of the user family in houses.

| No | Location          | Construction year* | Plan type              | Roof type                      | Socio-economic status |
|----|-------------------|---------------------|------------------------|--------------------------------|-----------------------|
| 1  | Gumüşdamla        | Over 100           | Selamılıkki type       | Octagonal kirman              | Wealthy               |
| 2  | Gumüşdamla        | Over 100           | Selamılıkki type       | Octagonal kirman              | Wealthy               |
| 3  | Gumüşdamla        | Over 100           | Selamılıkki type       | Octagonal kirman              | Wealthy               |
| 4  | Gumüşdamla        | Over 100           | Selamılıkki type       | Octagonal kirman              | Wealthy               |
| 5  | Gumüşdamla        | Over 100           | Selamılıkki type       | Octagonal kirman              | Average              |
| 6  | Gumüşdamla        | Over 100           | Selamılıkki type       | Octagonal kirman              | Average              |
| 7  | Gumüşdamla        | Over 100           | Interior sofa          | Octagonal kirman              | Average              |
| 8  | Gumüşdamla        | Over 100           | Interior sofa          | Octagonal kirman              | Average              |
| 9  | Gumüşdamla        | Over 100           | Interior sofa          | Octagonal kirman              | Average              |
| 10 | Gumüşdamla        | Over 100           | Selamılıkki type       | Square kirman                 | Average              |
| 11 | Gumüşdamla        | Over 100           | Selamılıkki type       | Square kirman                 | Average              |
| 12 | Gumüşdamla        | Over 100           | Interior sofa          | Square kirman                 | Average              |
| 13 | Gumüşdamla        | Over 100           | Interior sofa          | Square kirman                 | Average              |
| 14 | Gumüşdamla        | Over 100           | Agglutinative type     | Square kirman                 | Average              |
| 15 | Gumüşdamla        | Over 100           | Single-room type       | Square kirman                 | Average              |
| 16 | Gumüşdamla        | Over 100           | Selamılıkki type       | Octagonal kirman with pasin   | Average              |
| 17 | Gumüşdamla        | Over 100           | Agglutinative type     | Octagonal kirman with pasin   | Low                  |
| 18 | Gumüşdamla        | Over 100           | Single-room type       | Flat octagonal kirman         | Low                  |

*As stated by home owners.

current events, strengthening family ties and neighborly relations around the tandoor, which is right in the middle of the kitchen space underneath the roof (Figure 29) (Akin 1985; Şen and Erdoğan 2019; Özbir 2017). In this arrangement, the roof provides the house with the sole source of light, an aperture that also allows smoke to be emitted from the structure. The tandoor is at one corner of the kitchen and there is an additional tandırbaşı section in the kitchen of wealthy families that has a smoke shaft of its own (Akin 1985).

In our pilot village of Gumüşdamla (Zargıdı), all the kitchens (locally ev/yerevi) of the houses have what is called a kehriz made of stone or marble right under the roof where the tandoor is usually located; this is an area connected to the sewage system where dishes are washed. In this arrangement, the tandoor takes its place in the tandırbaşı of the kitchen, a second section of the kitchen that has a separate smoke shaft.

Although there are regional differences in the types of plans used in the tüteklikli houses of Anatolia, their layouts in general consist of an entry courtyard that is usually closed to the elements because of the climate, a closed sofa, a barn, and rooms arranged side by side. The kitchen (tandrevis), considered the beating heart of the house, is covered with a tüteklikli dome and is situated amid these spatial groups (Karpuz 1984). Another type of layout used in tüteklikli houses has an interior sofa, and in this type, the kitchen (tandrevis) stands on one wing of the closed sofa. The Selamılık type of plan that we see in the village of Gumüşdamla (Zargıdı) and is also used in Bayburt, seems to be a plan that is unique to this area.

Throughout Anatolia, the kitchens of all the tüteklikli houses are covered by a tüteklikli roof built of wooden planks or logs. The most commonly used types of tüteklikli roof in both urban and rural examples are octagonal and square tüteklikli coverings (described
in detail in section 3.1. Roof Construction). It can be seen that it is the octagonal tüteklikli roof (locally kirman) that is more commonly used in the houses of the village of Gümüşdamlı (Zargidi) (Figure 30). The square kirman is the type that follows the octagonal kirman in popularity. However, besides this main typology, there are two types of tüteklikli roof that are unique to the region. The first of these is the “pasin” type covering that is placed in the center of the octagonal kirman covering; the other is also placed at the center of the octagonal kirman covering but is made from sliding wooden planks and called a “flat octagonal kirman roof” (Figures 22C and D). These subtypes that are not usually encountered in the rest of Anatolia are local applications that are peculiar to the village of Gümüşdamlı (Zargidi) and Bayburt environs.

There is no socio-economic differentiation to be made between the types of roofs of the houses. Families in each socioeconomic group have an octagonal, square or octagonal kirman with a pasin covering at the center (Table 1). There was one house observed however belonging to a family of lower socioeconomic status that had a flat octagonal kirman, a type of roof that is less costly and needs less workmanship. This single example, on the other hand, does not provide enough evidence to say that there is an association between types of roofs and socioeconomic status. The choice of the types of roofs can be explained by the homeowners’ preference.

No difference can also be seen in terms of socioeconomic status in the layouts of the houses in the village. The wealthiest families in the village – the families Sever, Tokdemir, Soysal and Bayhan – live in houses that have been built in the Selamlikli type. This plan however is also the most common type to be used and in observed in the homes of families with average income (Figure 31, Table 1). Of the two houses in the village built in the “single-room type,” one has an octagonal kirman with a pasin covering and belongs to a family of lower socioeconomic status. This single example again is not sufficient to make a generalization.

The socio-economic hierarchy in the region is predominantly visible in the quality of the pots and pans displayed on the shelves (terek) of the kitchen. All of the houses reflect a general kitchen (yerevi) design that is characteristic of the region but the pots and pans laid out on the wooden shelves (terek) in the kitchens of the wealthy are of much higher quality. The villagers refer to the pots and pans as “bakırlar” (the coppers) and the copper cookware displaying the copper workmanship of the region can be seen more abundantly in the houses of the wealthy (Figures 32 and Figures 17Right).
Another differentiating element revealing a family’s socio-economic status is the decoration around the T-shaped wooden columns (locally direk) on which the kirman roof rests. These columns are an important artifact in the house and are distinctly more decorative in the houses of the wealthy, displaying a sawtooth pattern or woodcarving aujurs (openwork) (Figures 33, Figures 15, Figures 18, Figures 25). Some of the column capitals have been carved in a more decorative manner (Figure 33). Regarded by the villagers as a sign of the homeowner’s prosperity and prestige, some of these motifs are believed to be symbols to ward off the evil eye and demons (personel interview). In the same way, the Selamlık balustrades in some houses are more embellished (Figures 9 and Figures 14). These plastic elements contain the decorative energy and provide the aura for the plastic of the interior.

The socio-economic level of the household is also revealed by the degree to which the kirman roof and house in general are kept clean and orderly. Affluent families will keep the roof and kitchen shelves (terek) clean, freeing these elements from the dirt and soot that is spread around the house from tandoor. In some other less prosperous households, the kirman roofs and shelves (terek) are visibly covered with a thick layer of soot (Figure 16: Left and 24: Above right and left).

There are different opinions as to the reasons for the construction of the kirlangıç dome and tüteklikli house. The most accepted theory is that this type of roof was chosen for the purpose of internal heating. These houses, built in cold-weather habitats, provide the means for its inhabitants to meet all their needs as well as the needs of their livestock under the conditions of the harsh and long winters, giving them shelter while also making food and firewood available at all times during the winter without having to venture outdoors (Yakar 2000). Since the houses are buried under the snow and the roads are closed off for long periods of time during the severe winters, ensuring sustenance inside the boundaries of the house is of vital importance.

Another reason asserted to explain why these kinds of houses are particularly preferred is the belief that they might have been built to protect the dwelling from the attacks of wild animals.
(Rawlinson 1902). These subterranean houses serve to prevent the wild animals from approaching the dwellings in search of food under the severe conditions and heavy snowfall that lasts throughout the winter season.

The famous British archeologist, traveler and diplomat Austen Henry Layard offered a different interpretation of why these types of houses were built during his travels through Ottoman Anatolia and Armenia. Layard asserts that these houses were constructed not only because of climatic and environmental conditions but also due to various social and political factors (Layard 2002; Khatchadourian 2014). Layard states that the people in the region may have built these houses for safety and concealment purposes, to ward off unwanted visitors, terrorist threats and outlaws running from the authorities and the military because of smuggling and other illegal activities (Layard 2002; Khatchadourian 2014).

6. Conclusion

The tütelikli house represents the vernacular residential culture of the area of Anatolia known as the East Anatolian region and is a unique example of traditional Anatolian residential architecture with its strikingly unique characteristics that have been designed for severely cold climatic conditions. The most important section of the tütelikli house is the kitchen, referred to in some districts as “ev” (home) and in others as tandrevi. This space in the house is covered with one of various types of tütelikli roof. The kitchen is the heart of the house and the place where all internal activities are carried out. This type of house carries a unique identity in the region and, although being closely related to similar houses in Asia and Transcaucasia with their swallow-dome roofs, the dwellings in Anatolia boast of many characterizing and differentiating local applications.

This type of house is no longer constructed in the region today. Some of these matchless examples of Anatolian vernacular architecture have been abandoned by their owners and left to deteriorate and some are in collapse. Those that are still being used by their owners have been equipped with modern fixtures and appliances such as kitchen counters, refrigerators and dishwashers, and it is also heartening to see that the roofs of the houses have not been touched. Families with the means to do so have built concrete houses nearby, choosing to live in their new homes while still preserving the old and traditional ones to use as space for storage, baking, and as a gathering place for the village women at “henna” nights (a party hosted for the village women on the eve of a wedding), weddings, funerals and other household events.

The urban examples of these buildings are under protection. The ones in the rural areas unfortunately have been left to their fate. The houses in the province of Bayburt, where our study took place, are in the same situation. While the mansion-like houses in the urban areas are protected under law, there is no house in rural Bayburt that is under protection. There is not a single house that is officially registered in the village. No legal protection has been offered to these houses, which represent the heart of vernacular culture, and instead, the future of these structures has been left to the will of their owners.

These houses are a unique part of Anatolian residential culture in addition to being extraordinary examples of woodbuilding tradition and it is our duty to pass this on to future generations. Ensuring that the values brought into our contemporary world are preserved for the benefit of future generations necessitates taking on the important responsibilities of protecting the identity of the regions of which these houses are a part, safeguarding the houses to achieve sustainability of local architectural values, and securing a place for these structures in the literature as a contribution to posterity. These houses constitute a significant part of rural traditional architecture and make up the fabric of the countryside. It is of vital importance that preservation awareness and cultural consciousness is established in general and particularly among the owners and users of these unique houses.

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No potential conflict of interest was reported by the author(s).

Notes on contributor

Alev Erarslan completed her university education at Istanbul University, Faculty of Letters, Department of Near Eastern Languages and Cultures. She carried out her master degree on Mesopotamian Vernacular Architecture, in the Department of History of Art at Istanbul Technical University. She earned a doctorate degree in the Department of History of Art at Istanbul Technical University on Urbanization Processes in Anatolia. She has been actively involved in various survey and archeological projects being undertaken by the universities and archeological institutes. Erarslan continues to study the rural and vernacular architecture of Anatolia. She is currently an associate professor at the Department of Architecture at Istanbul University.
Aydın University, Faculty of Architecture and Design.

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