

Original Research Article

The Influence of the Land on the Form and Plan of Buildings in the Old Buildings of the Hajj Village*

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Abstract| Statement of the Problem: In the last two decades, with the transformations aligned with rural modernization programs within the framework of development plans, much of the valuable textures have been destroyed, and the appearance of villages has increasingly resembled that of cities. Among these, the village of Hajj in Paveh County, with its stepped landscape, possesses diverse and valuable examples of vernacular housing patterns. However, its transformation into a tourist village and the construction of new buildings have led to a structure that is in stark contrast to local architecture, suggesting that the overall shape of the village will change in the coming years.

Understanding and preserving the methods and approaches to building construction that are either in opposition to or in harmony with nature in the vernacular and stepped architecture of Hajj is essential for this study. The findings could influence the design and construction of new buildings in the village. Therefore, this study aims to provide answers regarding the relationship between architecture and nature, as well as to identify the influence of topography in shaping the forms of residential buildings in Hajj.

This study was conducted through library studies and field surveys, employing a descriptive-analytical method.

The results indicated that the form of the mountain (the way it extends from the foothills to the peak), the slope, and the soil composition at the construction site have led to the formation of three types of buildings in terms of their placement on the mountain slope and their relationship with the land in this village, which laid the groundwork for the development of stepped architecture. Thus, the influence of nature on architecture can be considered a distinctive feature of the vernacular architecture of this region.

Keywords| *Stepped Architecture, Hajj, Vernacular Architecture, Topography.*

Introduction| Rural houses are a type of housing that best aligns with general culture and reflects vernacular architectural patterns in each region (Heydari et al., 2022, 6). The vernacular architecture of the villages in the

Zagros region of western Iran has developed under the influence of utilizing free natural energies and peacefully coexisting with the site and surrounding environment, taking various forms. In areas like Uramanat, due to the steep topography where villages are located, buildings have primarily been constructed to suit the slope and

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then incorporate elements that take advantage of climatic comfort factors.

Among these, the village of Hajij, part of the Nowsud district in the Paveh county of Kermanshah province, is one of the mountainous villages located in the Uramanat region of Iran. It is situated on the steep slopes of Mount Shalan in a stepped manner and has a concentrated residential structure. The buildings in the village are generally constructed with stone materials, typically two stories high, and lack courtyards (Hajinejad et al., 2013, 58).

Following the operation of the Daryan Dam and the transformation of Hajij into a tourist village, changes have been made to meet the needs of travelers and tourists, as well as to provide government services to villagers. New buildings such as a boarding school, guesthouse, commercial spaces, and numerous residential buildings for low-income groups have been constructed by various public and private sectors. However, the construction methods, materials, and forms of these buildings are in stark contrast to the village's vernacular architecture. Despite the historical and valuable structure present in this village, no comprehensive research has been conducted on the traditional vernacular patterns there. For this reason, the current study aims to identify the types of housing in Hajij, examine their spatial organization, and investigate the factors shaping the stepped texture of the village.

Research Method

This study was conducted using descriptive and analytical methods within the framework of library studies and field surveys. To gather the research background, the geographical and climatic conditions of the village were explored through library studies. By visiting the village of Hajij and gaining a general understanding of its vernacular architecture, initial discussions were held with elderly locals and vernacular architects regarding building construction methods and the factors involved. During a tour of the village, approximately 106 buildings were initially observed, revealing similarities in terms of materials, appearance, and placement on the slope of Mount Shalan, allowing them to be categorized into several groups. Considering the abundance and quality of the buildings, to obtain more precise information, 60 houses from various parts of the village with diverse morphological characteristics in terms of form and placement were selected for further analysis (Fig. 1). These were evaluated through photography, plan drawing and interpretation, identification of forms and structures, types of materials used, soil composition, and site topography.

Research Questions

1. How is the relationship between architecture and nature manifested in the residential buildings of Hajij?
2. To what extent has the topography of the construction site influenced the forms of the buildings in Hajij?
3. How significantly has the soil composition affected the floor plans of the houses in Hajij?

Background Research

An examination of the resources related to the subject of this study indicates that research has been conducted regarding the relationship between architecture and its surrounding environment, as well as its classification, from the past to the present. For instance, Italian architect Giancarlo De Carlo noted that after the emergence of the modern movement, experts within this school expressed strong opposition to the application of typology and typological classification, seeking to negate and reject history and its reference to it. Typology and its application in architectural design could not be utilized because it posed a significant barrier to the creativity of architects and architecture students, leading it to be termed "stereotype," "type barrier," or "freezing type" (Decarlo, 1985).

Zargar et al. (2016) in their article "Design and Formation of Rural Houses as Narrated by Old Architects" documented and analyzed common architectural methods in the Garmsar area and identified the elements that contribute to the identity of rural architecture in the region. The authors argue that the reconstruction and revival of buildings in this area will foster a sense of belonging,

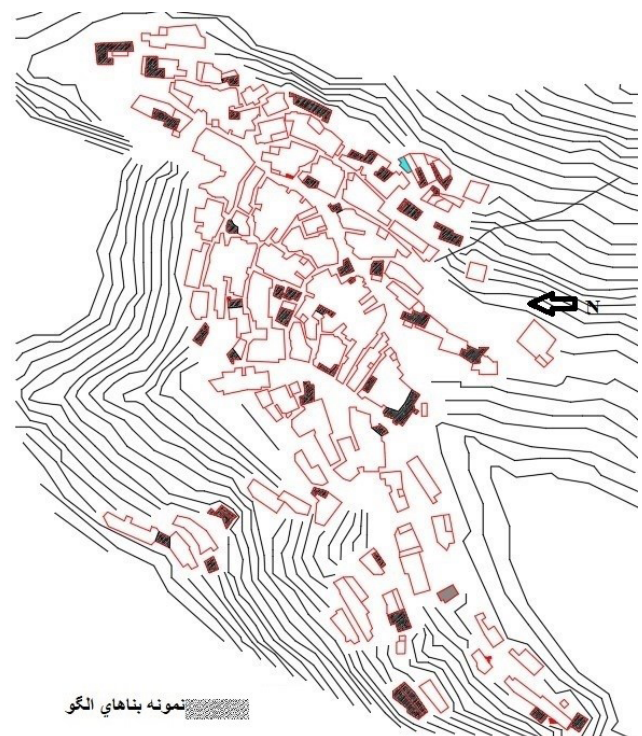


Fig. 1. Distribution of samples collected (60 residential buildings) from the typology of Hajij village houses. Source: Authors.

revive a production-based rural lifestyle, reduce energy consumption, and provide climatic comfort through the use of architectural techniques in newly constructed rural housing.

Gholamhossein Memarian & Tabarsa (2012) in their article “Typology and Typological Classification of Architecture,” which is derived from a research project entitled “Typology of Iranian Houses,” explored the history of typology dating back about two thousand years and examined its history in Iran. The results indicate that typology, like space and form, can be interpreted based on the user’s perspective; although it has a specific definition and can represent a group of objects with common characteristics, the definition of its characteristics can vary based on interpretation.

In their article, Rahravi Poodeh et al. (2018) “Typological Analysis of the Main Spaces in Multi-Sided Houses of Isfahan in Terms of Plan Shape,” aimed to investigate the morphological characteristics of houses in plans, categorized and typologized the designed spaces in historical houses of Isfahan. The results indicate that the orientation of the longitudinal axis of the courtyard has a significant role in the layout and organization of spaces, while climatic factors such as sunlight and courtyard dimensions (length and width) were considered second in priority. The elongation of the courtyard in the north-south or east-west direction notably influenced the spatial arrangement.

In their study, Hamejani et al. (2018) “Examining the Physical Patterns of Settlement Systems on Space Sociability in the Architecture of Uraman” aimed to identify and formulate the physical patterns of the settlement system and their impact on the sociability of spaces within Uraman architectural structures. They concluded that the settlement system in the human-built environment has a significant effect on enhancing the sociability of physical spaces, and the patterns of this system can affect the quantity and quality of public spaces in Uraman, either alone or in combination.

In their research, Bahram Karami et al. (2022), “Lifestyle and the Form of Houses: A Case Study of the Stepped Houses of Paveh,” hypothesized that the form of houses is influenced by lifestyle characteristics. They believe that changes in these factors lead to changes in the behavioral patterns of residents and consequently in the form of their houses. The results indicate that among residents, the factor of “customs and lifestyle” has less importance in the tangible aspects of lifestyle, while the presence of “media” in today’s life has led to changes in tangible aspects of “consumption”, like tastes and preferences for household equipment and furnishings.

GharehBaglou & Silvayeh (2019) in a study titled “Assessing Influential Factors on Vernacular Housing in Nosmeh

Village (Paveh County)” aimed to examine the factors affecting the spatial organization of houses. The findings indicate that four main indicators—physical construction principles, welfare factors, beliefs and convictions, and the geography of the location (topography and climate)—ranked in order of influence on house construction.

Dana Salem et al. (2019) in an article titled “Mental-Physical Typology of Vernacular Housing in Western Kurdistan Based on a Historical-Complementary Perspective” aimed at the identification and typology of the vernacular housing of western Iran and understanding the elements and concepts of these types of. The study shows that the climate’s influence on form, height, layout, site slope, and local and natural materials were major factors in the formation of settlements in these areas. Additionally, the affinity for nature, extensive tree planting, and the placement of buildings on slopes with views of the surrounding nature and other village structures are characteristics of the architecture in these regions.

Heydari et al. (2022), in their article “Analyzing the Spatial and Formative System of Vernacular Housing Patterns in the Stepped Village of Sar Aqa Seyyed, Chaharmahal and Bakhtiari Province,” aimed to understand the vernacular housing patterns in Sar Aqa Seyyed village and concluded that the slope of the land is the most crucial factor in shaping the housing patterns of this village. Different slopes have enabled the construction of layered buildings. Therefore, the distinction of the present study from the aforementioned studies can be articulated in terms of a holistic and detailed approach to the subject. In previous studies, greater emphasis has been placed on identifying the factors influencing the formation of residential buildings in mountainous areas, with climate, nature, livelihood conditions, and others introduced as contributing elements. However, this study focuses specifically on the role of nature and subsequently the factor of topography as a subset of nature, exploring the impact of land slope on the form of residential buildings and the manner of residents’ interaction (either engagement or intrusion) with it at the construction site.

Theoretical Foundations

• Rural housing

In the past, housing was seen as a physical phenomenon constructed merely in response to uncontrollable elements, with policies for housing provision centered around construction standards and the manner of the utilization of materials. Initially, the primary mission of a building was to serve as a shelter; however, over time and with advancements in technology, this idea significantly evolved, and various social, cultural, and identity aspects began to receive attention (Sartipipour et al., 2017, 5).

Housing is more than just a physical shelter; it encompasses all the necessary services and facilities for better human living and should provide relatively long-term and secure occupancy rights for its users. Therefore, like the physical structure, the aspect of entitlement can also be considered on two levels: the first level focuses on satisfying the primary physical and psychological needs at the scale of residential units, while the second level considers the extent of the village's benefits as the setting for housing units, including basic services and welfare facilities. This is because the concept of housing, in addition to a physical location, encompasses the entire residential environment, which includes all essential services and facilities needed for a family's well-being, as well as employment, education, and health programs for individuals (Sartipipour, 2009, 54).

Vernacular rural housing reflects the context and daily life of rural inhabitants, serving as a specific manifestation of human activities (livelihood, agriculture, and animal husbandry). Rural homes have a profound connection to their environment, depend on it, and house individuals engaged in productive activities. Characteristics of these types of dwellings include being centers of conscious and voluntary human action. Due to the differing viewpoints and practices of people, they exhibit various characteristics and identities. Places possess features that reflect the values, goals, activities, and human relationships established in connection with natural elements (Sartipipour, 2011, 8).

• Vernacular - stepped architecture

Vernacular architecture serves as a domain for experiencing the roots of architecture and recognizing it as the emergence of architectural beginnings. The diverse forms of vernacular architecture represent the initial stages of architecture in different lands and times. There are two main perspectives on vernacular architecture and its related concepts: the first views it as the extension of building traditions in a location, based on the materials and resources available in that region and cultural customs, linking it to the primitive hut through its closeness to early living conditions. From a historical perspective, vernacular architecture, due to its necessities, has undergone less drastic change, serving as a living example of the vague beginnings of architecture. The second perspective regards vernacular architecture as a type that, due to less access to specialized facilities, honestly reflects personal, familial, and livelihood needs as well as regional and climatic conditions. In this view, the forces and fundamental reasons behind architectural events are clearly visible. In fact, both categories can draw attention to the primitive hut architecture, as they both approach the innocent and initial state that connects architecture to the primitive hut (Khodadadi et al., 2022, 16).

Thus, unlike modern architecture, which seeks to flatten and clear the ground for buildings, vernacular architecture embraces topography as a symbol of the region. The removal of the natural elevations is a technique that leads to placelessness while terracing a site with topography results in a stepped form of the building, which metaphorically refers to the act of "plowing" the site (Frampton, 1981). The final product can encompass a wide range of forms, but ultimately strives for architectural identity and engages the perceptual senses of the observer, sometimes occurring with similar textures or variations through different materials. This interaction leads to earth-related behaviors, which in some steeply sloped settlements utilize stepped and terraced methods (Dana Salem et al., 2019, 38).

• Introduction to the Hajij village

The village of Hajij is located in the Nowsud district of Paveh County, with geographical coordinates of 46 degrees and 20 minutes east longitude and 35 degrees and 9 minutes north latitude. It is situated 34 kilometers from the city of Paveh (Uramanat) and 123 kilometers from Kermanshah. The population of this village is 990 people, comprising 181 households (Jalalian et al., 2014, 213). Hajij is surrounded by the Shalan Mountain to the north, west, and east, while to the south, it borders the Sirwan River and then the Shaho Mountain. Following the filling of the Daryan Dam, several buildings, gardens, and the access road to the village (from the southeast) that crossed over the Sirwan River bridge have been submerged. A new communication route has been established by digging several tunnels on the southwestern side of Hajij.

• Climate of the Hajij area

According to the climatic zoning of Iran conducted by Köppen, the Paveh region falls under the cold and mountainous climate category. This region experiences cold, snowy winters and mild to warm, humid summers. Weather statistics indicate that the average temperature in the warmest month exceeds 10 degrees Celsius, while the average temperature in the coldest month is below degrees Celsius. Based on the De Martonne classification, which determines a region's climate type based on temperature and precipitation, this area is considered semi-humid.

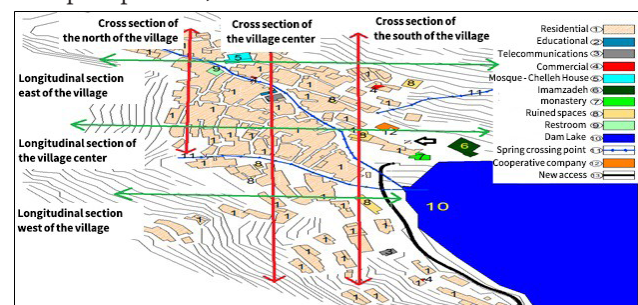


Fig. 2. Map of Hajij village. Source: Islamic Revolution Housing Foundation of Kermanshah Province, 2012.

Due to significant cold weather from November to April, frost phenomena occur (Memarian & Azimi, 2013, 157). One of the significant winds in this area is the “Rashava” or black wind, which blows almost throughout the year from the Sirwan River (to the south) towards the village, making it the prevailing wind in the region. Other winds in the Uraman region, particularly in Hajij, include the “Shamal” and “Zellan” winds. The “Shamal” generally blows towards the east and southeast, while the “Zellan” flows in the opposite direction of the northern wind, blowing towards the northeast, south, and southwest (Sajjadzadeh et al., 2012, 12).

• Architecture of the Hajij village

According to a classification based on the topography of villages in the provinces of Kermanshah and Kurdistan, villages are divided into three types: mountainous with steep slopes, foothills with moderate slopes, and plain with gentle slopes. Each of these three types possesses distinct architectural characteristics and fabrics (Moulanaei, 2004, 196). Based on this classification and the conducted studies, the village of Hajij can be categorized as a mountainous village with steep slopes. The average cross slope in this village is 39.9%, with a maximum cross slope of 51.4%. Additionally, the average longitudinal slope is 39.6%, and the maximum longitudinal slope is 63.5%. Based on the zoning conducted in Figs. 1 & 4, and the results obtained in Figs. 2 & 3, it is evident that in the southern area of the village, the average cross slope ranges from 17.6% to 31.9%, and the maximum cross slope ranges from 45.3% to 68.3%. In the central core of the village, the average cross slope ranges from 13.3% to 45%, and the maximum cross slope ranges from 49.4% to 57.8%. In the northern part of the village, the average cross slope ranges from 13% to 42.8%, with a maximum cross slope between 58.8% and 59.6%. Regarding the longitudinal slope, in the eastern part of the village, the average longitudinal slope ranges from 4.9% to 45.2%, and the maximum longitudinal slope ranges from 57.8% to 73.4%. In the center of the village, the average longitudinal slope ranges from 2.6% to 28.8%, with a maximum longitudinal slope between 39.10% and 42.7%. In the western part of the village, the average longitudinal slope is about 45%, and the maximum longitudinal slope is 78%. Additionally, considering the elevation difference between the lowest point in the southern part of the village and the highest point in the northern part, the elevation difference along the north-south axis of the central part of the village (the watercourse) is approximately 40 meters.

In this village, the placement of houses begins from the eastern extension of the shrine of “Seyyed Abidullah bin Ziyad,” known as “Kouseh Hajij,” and extends up the slopes of Mount Shalan. The steep topography of the location is one of the primary reasons that many buildings

in this village are constructed in a stepped manner, allowing for visual dominance of the structures on their roofs (Figs. 5 & 6).

Observations of residential buildings indicate that the total area of houses in this village ranges from 60 to 125 square meters, and they are generally built as two-story structures. In buildings where the owner’s livelihood is based on animal husbandry, a separate space is constructed in a single story along the southern part of the building for a hayloft.

In terms of spatial arrangement, the ground floor contains service spaces such as a stable, storage area, “madvaq” (the place for baking bread), and a bathroom. Access to each of these spaces on this floor is independent of the other areas. The first floor is designated as the living space. In some of the older, smaller buildings in the village, the first-floor area consists of a bedroom, a small cooking area, and a section for storing hay. However, in larger buildings, each house typically includes one or two large and small rooms, a living area, and a kitchen, with additional service spaces such as a bathroom and a bread-baking area located on the ground floor alongside the storage and stable. In this type of building, the roof of the hayloft is utilized as a courtyard (Fig. 7). A vent for hay discharge, approximately 40 cm wide and 80 cm long, is provided on the roof of the hayloft. Inside the stable, one to two cows

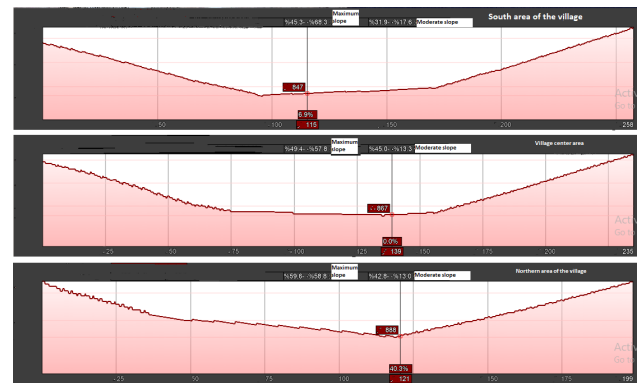


Fig. 3. Cross sections of the Hajij village area. Source: Authors.

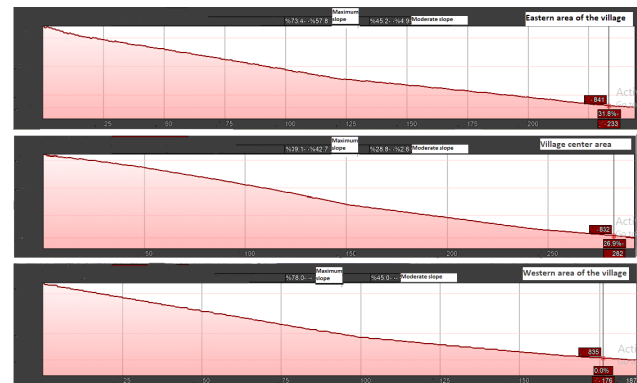


Fig. 4. Longitudinal sections of the Hajij village area. Source: Authors.



Fig. 5. Aerial image and scope of longitudinal and cross sections of part of Hajij village. Source: Authors archive.

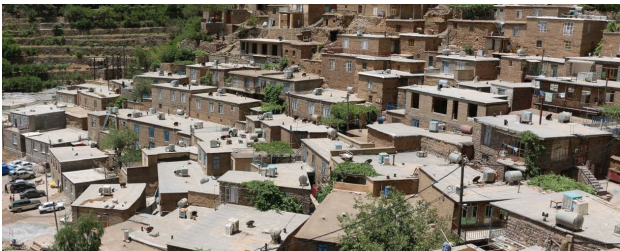


Fig. 6. Part of the arrangement of buildings in Hajij village. Source: Authors archive.

and several goats are kept, and according to the residents of these types of buildings, the warmth generated by these animals helps to heat the living space on the upper floor during the cold months of the year.

The rocky nature of the land where the village of Hajij is situated has made it impossible to dig sewage wells and construct bathrooms next to most houses. To address this issue, residents have established these facilities in areas where well-digging is possible, close to the watercourses from the springs flowing down from Mount Shalan, and have placed them at a distance from each other based on gender. The absence of bathrooms in the older buildings of the village underscores this matter.

• Residential buildings in the Hajij village

The initial formation of residential buildings in the village of Hajij is influenced by the soil composition and the steep topography of the area. The mountainous and rocky nature of this region has created limitations for land use in construction. Buildings are primarily constructed with small spaces and minimal area, and each structure has its own unique form (affected by local conditions) and features differences in elevation compared to neighboring buildings. The height discrepancies in the construction sites, along with other influencing factors, have fostered the development of the stepped architecture in this village

(Fig. 8). The presence of stepped architecture has allowed some buildings to utilize their roofs as courtyards, transforming these rooftops into gathering places for social interactions and activities.

Below, in Table 1, based on the soil composition and the topography of the construction site, which have facilitated the development of terraced architecture, examples of residential buildings in the village of Hajij are categorized into three types.

The first type of structure is typically two stories high. The soil type at the site of these buildings is generally earthen (a mixture of gravel and soil), allowing for digging foundations using a pickaxe. The foundations of these buildings, set at a height of approximately 60 to 70 centimeters, are constructed with stone materials and clay mortar, reaching a depth into the ground. The topography of the construction site (except for the northern side of the ground floor, which leads into the mountain) has enabled the buildings to have regular angles, taking on square and rectangular shapes.

This type of house is predominantly located in the southern area (near the dam lake) and the central part of the village. The northern wall of the ground floor is buried in the mountain due to the terrain, making it invisible. The floor level of the established spaces (service areas such as storage, shops, haylofts, stables, and baking areas) on this floor is often 40 to 50 centimeters lower than the surrounding pathway. The first floors, designated for residential use, function independently from the service-oriented ground floor, although they are structurally supported by it. Access to each floor is separate and directly obtained through the public pathways (Fig. 9).

The rocky soil, the presence of large boulders, and the steep topography of the construction site have led to the emergence of another type of building with irregular forms in the village of Hajij. According to local architects



Fig. 7. a) Use of the hayloft roof as a courtyard, b) Hayloft vent on the roof, in Hajij village. Source: Authors archive.

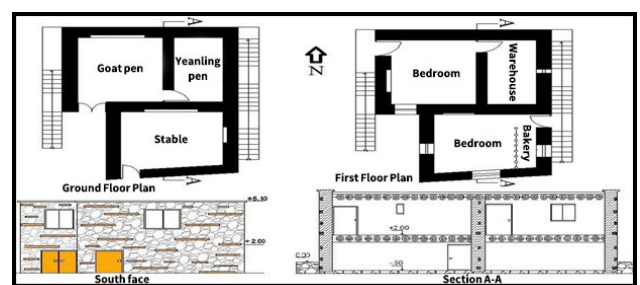


Fig. 8. Sketch of the building arrangement in Hajij village. Source: Authors.

Table 1. Typology of residential buildings in Hajij village. Source: Authors.

Type	Plans and facades
One	
Two	

Rest of table 1.

Type	Plans and facades
There	

and studies conducted, these buildings generally lack foundations. These types of structures are typically established on rocky surfaces where foundation digging is not feasible. The topography and limited land area make it impossible to extend the buildings or utilize free forms. As a result, the shape of the buildings in this category is largely influenced by the contours of the mountain at the construction site. These buildings are generally two stories high, with the ground floor having service spaces and smaller dimensions compared to the first floor. This phenomenon occurs because the presence of rocks and large boulders on the ground floor prevents the expansion of the building, often leading to their use as part of the wall structure. On the first floor, however, due to the increased area for living space, the buildings are extended along the roof of the ground floor. This extension results in a more regular form for the first floor compared to its ground floor (Fig. 10). Access to the floors of this type of house, which are mostly located in the eastern and western parts of the village on the slopes of the mountain, is independent of other floors and is obtained through the surrounding pathways. In some cases, there are buildings with a shared entrance or access point for all floors. Some of these buildings include a separate space for storing hay known as a Kaahdan (hayloft). The hayloft is

constructed in the southern part of the building, either at a lower elevation or at the same level as the ground floor. The height difference between the hayloft and the upper living spaces allows the roof of the hayloft to be used as a courtyard. The rocky nature of the land where the hayloft is built means that large boulders are used as part of the walls of this space. The third type of buildings (Fig. 11) in the village of Hajji, which are scattered in the northern part of the village on steeply sloped land, are typically constructed in an “L” shape and consist of two stories (with each floor being completely distinct in terms of function and structure from the other). The soil at the construction sites of these buildings allows for foundation digging in certain areas, while rocky layers prevent this in others. Investigations and discussions with local residents indicate that the soil quality of the first part (ground floor) designated for service use allowed foundation digging with a pickaxe and similar tools. In some cases, parts of the building are embedded within the ground, but the surrounding area is limited by high rocks. This limitation has influenced the form of the buildings to the extent that in some areas of the ground floor walls, the presence of rocks is incorporated into the structure. The first floor (the second part) of the third type of

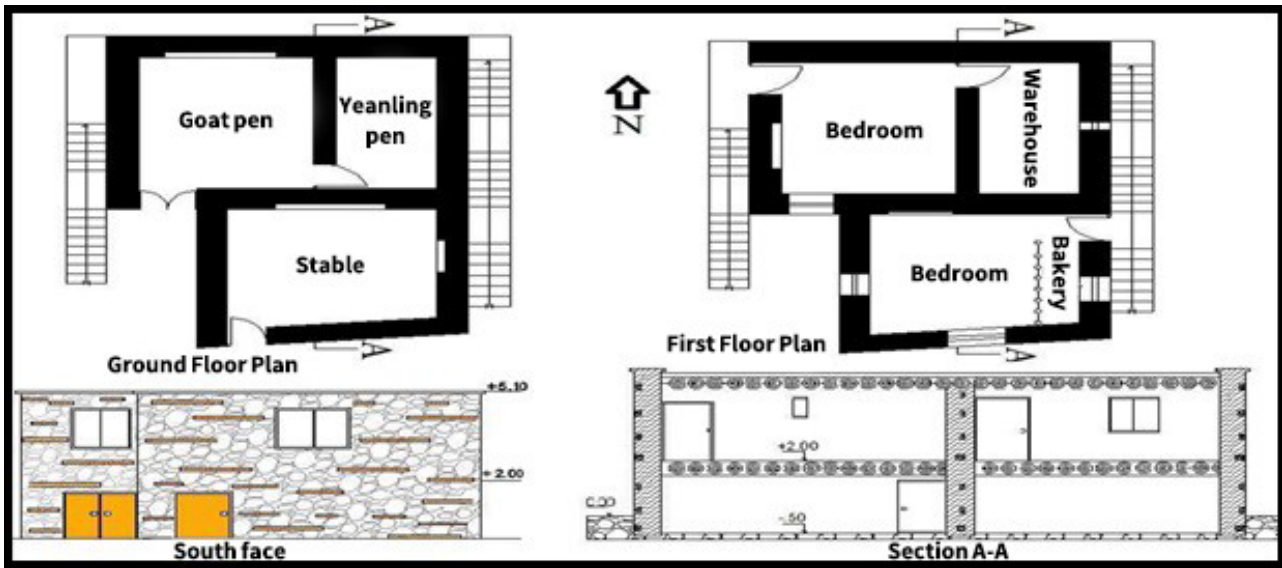


Fig. 9. Facade and section of the first type of building in Hajij. Source: Authors.

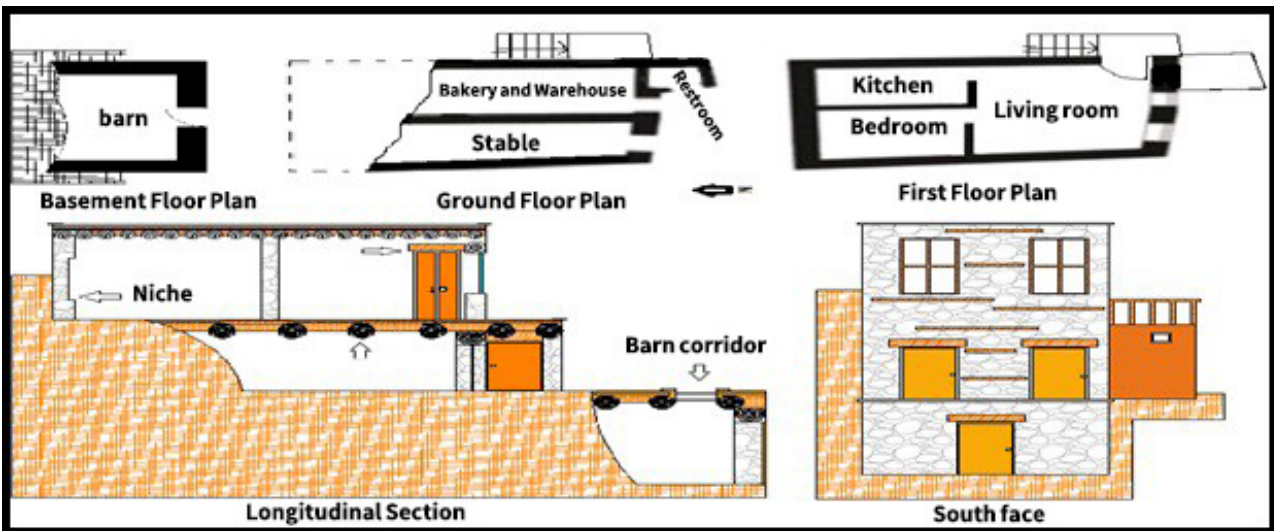


Fig. 10. Plan, Facade, and section of the Momeni house (with animal husbandry livelihood) in type 2 of Hajij village. Source: Authors.

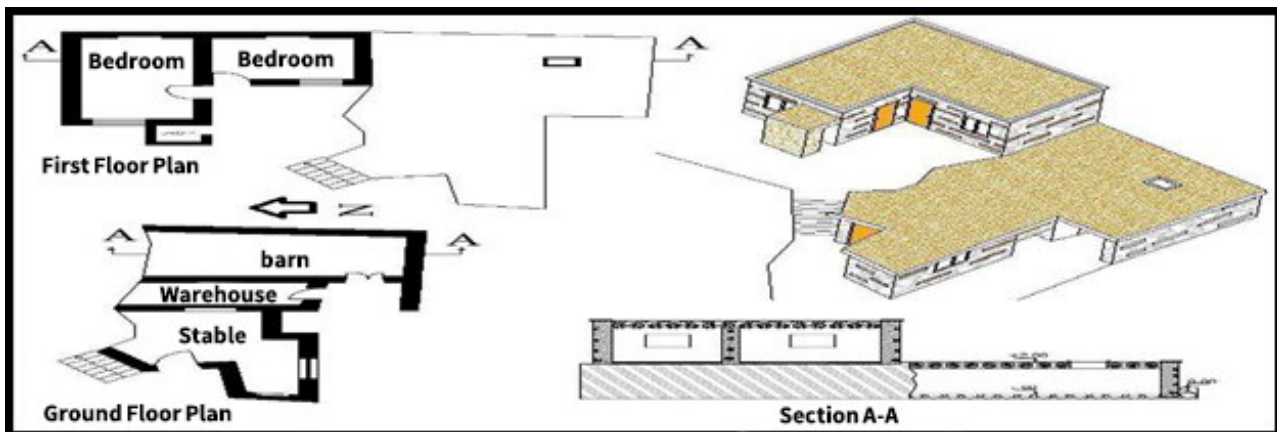


Fig. 11. Plan, facade, and section of the third type of building in Hajij village. Source: Authors.

building, where access to different spaces is possible independently, is designated for residential use. This section of the building operates independently from the lower floor. Its foundations, similar to those of the second type of building, rest on a rocky layer, but it has a more regular and free form compared to the lower floor. In this type, the roof of the ground floor is utilized as a courtyard for the upper floor; however, there is no structural connection between the two floors, and access between these two parts of the building is solely through the surrounding stepped pathways.

The adherence to the natural shape of the land, the avoidance of site disturbance, the use of compatible materials and construction methods, the separate access for each floor, and the stepped nature of most buildings are shared characteristics evident in all three types of buildings in Hajij. The ground floor walls of these structures, which primarily serve functional purposes, are built with stone and clay mortar, measuring approximately 70 to 80 centimeters thick. The walls of the first floor, which comprise the residential area of the building, are constructed with a thickness ranging from 40 to 60 centimeters. To prevent heat loss and condensation on the internal stone walls, they are plastered with mud. Table 2 summarizes the characteristics of each of these building types.

Conclusion

The vernacular architecture of the villages in western Iran, characterized by its distinct structure and free from external

influences or imitation from other parts of the country, is considered a part of Iran’s authentic architectural heritage. This architecture has evolved based on the centuries-long experience and understanding of the local inhabitants regarding their environment, forming an integral part of their cultural and social identity. By accurately recognizing the factors and elements involved and addressing the contemporary needs of residents while incorporating modern construction technologies, it can serve as an appropriate model for designing and building new rural structures.

The results from the direct observation of 106 residential buildings, followed by a thorough analysis of 60 of these structures with residential, storage, and stable functions, indicate that the village of Hajij, among the villages of the Uramanat region, has established a two-way relationship with its surrounding nature through its stepped architecture. The forms and arrangements of the buildings are influenced by the soil composition, topography, and the shape of the mountains at the construction sites.

The studies conducted on the examined buildings across different parts of the village reveal that the aforementioned factors have led to the construction of residential buildings in predominantly two-story formats, which can be categorized into three types based on their soil and topographical characteristics.

The first type, primarily located in the flat areas of the village, allows for deeper foundation digging due to the soil type and topography. The first floors, designated for

Table 2. General characteristics of buildings in Hajij village based on three residential types. Source: Authors.

Type	Location	Soil composition type	Topography condition	Nature’s influences on form	Number of floors	Floor functionality	Structural relationship of floors	Access to each Floor	Courtyard location	Building form in village
First	South of the village	Earthy (diggable)	Mild	Topography of the site and soil type	Ground floor First	Service Residential	Aligned	Separate and through a public pathway	No courtyard	Stepped
Second	Entire village	Rocky	Steep	Topography of the site, mountain shape, and soil type	Ground floor First Second	Service Residential	Aligned and independent	Separate and through a public pathway	Hayloft roof	Stepped
Third	North of the village	Earthy (diggable) Rocky	Steep	Topography of the site, mountain shape, and soil type	Ground floor First	Service Residential	Aligned and independent	Separate and through a public pathway	Hayloft roof	Stepped

residential use, are built above the ground floor, which serves functional purposes. These cubic-shaped buildings account for about 15 to 20 percent of the village's structures. The influence of soil composition and topography on the forms of the other two types of buildings is more pronounced.

In the second type, most buildings are constructed on rocky surfaces, and the structures have been developed as much as the site conditions and the shape of the rocks allow. In these two types, the rocks are considered part of the ground floor, and at times, are utilized as structural components. This type constitutes approximately 40 to 45 percent of the village's buildings.

In the third type, which is smaller in area compared to the other two types and is constructed in an "L" shape, the building is divided into two almost separate sections. The first section, serving a functional purpose, has three sides built with stone materials, and the foundation is partially buried, while the other side adjoins the rock. The walls of the other section (the first floor) of these buildings, which are designated for residential use, are constructed

independently, similar to the second type, on rocky surfaces and extend along the roof of the service areas (ground floor). These buildings account for approximately 30 to 35 percent of the structures in the village.

In the second and third types, the roofs of the ground floors are often used as courtyards for the upper floors. In other words, the forms of the ground floors align with the topographical shapes of the construction sites, and in some buildings, the rocks are integrated as part of the structure. However, due to the changing focus on tourism in the region, the architectural structure and fabric of Hajij are undergoing transformation. Construction methods based on designs created by trained architects contrast with the traditional techniques that harmonize with local architecture and nature. Furthermore, the use of local materials in new buildings has significantly declined. These factors may change the overall character of the village in the coming decade.

Endnotes

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