



## Analyzing Physical Traits of Rural Housing in order to Achieve Its Architectural Pattern (Case Study: Hezaveh Village, Markazi Province)

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### Abstract

**Purpose-** The purpose of this article is the provision a context for the continuity and conveyance of hidden values in human habitations in a form of patterns for future plans.

**Design/Methodology/Approach-** Hezaveh village, located in Markazi Province, is one of the habitats that has always been noted due to its location and physical traits. Hence, three residential samples were studied and analyzed. The research has been formed with an inductive approach based on field observations and documentary studies. The selection method of samples was based on diversity indicators in structural and functional patterns. They were extracted among the observed samples based on statistical data according to the number of families, type of livelihood, etc.

**Findings-** The findings of the research demonstrate the way physical traits of habitats are considered in accordance with the natural environment, humans, and housing formation. Thus, housing can be understood as a fundamental type and pure form of a physical environment that represent those patterns. Because of the cold climate of the village, most houses have inner yards and are introverted. The ratio of the outer skin to the whole volume of buildings is low. Yards are relatively small and walls are thick. Moreover, the investigations revealed that there are somehow similar spaces in them.

**Practical implications-** In its simplest use, the findings of the research might be deemed as a pattern or criterion for the design of rural housing which reflects the architectural properties of that region.

**Originality/Value-** The analysis and inference methodology of a pattern for rural housing could be regarded as an innovation in this research.

**Keywords:** Physical traits, Rural housing, Architectural pattern, Hezaveh, Markazi Province.

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## 1. Introduction

The natural geography of Iran illustrates several environmental realities and their role in the formation, human communities' settlement, and the development of their activities and livelihood. Therefore, the location, establishment, formation, and physical expansion of Iranian cities and villages are depended on their environmental and geographical conditions. According to the performed studies, about 67 percent of rural areas are located in mountains or foothills, 13 percent in flat plains, and the rest in the desert area and seaside based on natural topography. This type of establishment demonstrates the impact of geographical factors on the distribution of rural habitations (Sartipipour, 2009). On the other hand, various natural, cultural, economic, political, religious, military, communicational, and other similar factors locally-spatially bestow a unique identity on a rural habitat. A change in each of those factors can transform the role of each location. Hence, the formation of rural space can generally be influenced by natural and human factors that have a close interactive relation together (Saeidi, 1998).

In the literature on habitation, there is an emphasis on the role of housing in identity acquisition (Pourdehimi & Nourtaghani, 2013). In the meantime, human settlement has always been in harmony and accordance with such social life, economic transformations, and expansion of technological facilities during the history of his life. The resulting changes might be observed in the image of their habitations and architecture during different periods of history. Rural architecture has not been an exception and always had a close connection with cultural and social values and technical and environmental facilities. Moreover, adherence to values, mores, and traditions has always ruled over rural architecture. The vernacular architecture is also the product of such communities which not only look after and develop traditions but also assist to maintain the ruling values of society and their cultural continuity (Rapoport, 1982). The physical solidity of human habitations is created as a consequence of social order where the structure of the neighborhood, sub-neighborhood, and residential unit comply with the structural traits of society. Human is free to choose from the facilities that culture provides and can participate in a special and creative culture to a certain extent. This means that each individual is born within a semantic system that

is understood through its symbolic manifestations by humans (Norberg-Schulz, 1975). The studies investigating the spatial distribution of living quality are very few in rural areas (Jamini & Jamshidi, 2014). Located in Markazi province, Hezaveh village is one of the areas that has kept its precious rural architecture and fabric. Besides, the village is prominent because of other aspects. Thus, the present research has studied the topic with the goal of investigating the physical traits of housing and habitation in Hezaveh village by analyzing three selected samples of housing with an inductive approach based on documentary studies with descriptive and analytical methods. Accordingly, the following questions are propounded regarding the subject:

- How is the habituating pattern in Hezaveh village?
- How are the physical and climatic traits of housing in Hezaveh village?

## 2. Research Theoretical Literature

### 2.1. Research Background

The history of performing typology studies of rural housing in Iran dates back to the early 1980s when 65 percent of the country's population were villagers. At first, Building and Housing Research Center carried out the studies and the results were presented and publishes in books titled *Rural Housing in Khouzestan Province* in 1982, *Rural Housing Typology of Kohkilooyeh and Boyer-Ahamad Province* in 1984, *Rural Housing Typology of Chahar-Mahal and Bakhtiari Province* in 1984, *Rural Housing Typology of Khouzestan Province* in 1986, and *Rural Housing Typology of Ilam Province* in 1988.

Afterward, the task of rural housing typology was undertaken by Islamic Revolution Housing Foundation in the late 1980s and early 1990s. One of the first works was the rural housing typology of Khorasan province. Its findings were published in a book titled "The Rural Housing Pattern, a Research on Rural Architecture of Khorasan Province" by the Islamic Revolution Housing Foundation in 1992. During the 1990s, Islamic Revolution Housing Foundation prepared typology plans for rural housing for the provinces of Khorasan, Fars, Yazd, Lorestan, Semnan, Isfahan, East Azerbaijan, and Ardebil. The studies related to the provinces of Fars and Yazd were devolved to this research group. In the first decade of the new millennium, the preparation of the typology plans of rural housing for the provinces of Kerman, Kordestan, Hormozgan, and Booshehr was also devolved to this research group and the job was

implemented and handed over between 2003 and 2006.

Since 2005, when the special plan for rural housing improvement was put into action, Islamic Revolution Housing Foundation and its provincial branches commenced the design of some types of rural housing in many provinces by employing local consultants so that results could be a guideline for design offices of rural housing in country's provinces. In some provinces, this was conducted by the main (controlling) consultant of the province which contained achievements of previous typology plans (Mansoori Pelasi, 2021).

The related performed researches with this village are mostly about rural housing of Markazi province comprising selected villages including Hezaveh. For instance, Sartipipour's research titled "The Architecture of Popular Vernacular Architecture in the Villages of Markazi Province" in 2013 and also the book titled "Rural Housing Typology of Markazi Province" in 2014. Hitherto, the physical traits of housing in Hezaveh village have not specifically been heeded and analyzed completely. In fact, the significance of the research is in accordance with the explanation of the physical traits of houses in this village which could lead to the recognition of design principles and the basis of habitation design. Moreover, it might assist designers to prevent spending so much time and cost in the future.

## **2.2. Physical Structure of Rural Habitations**

A rural environment contains three main physical elements, meaning land for agricultural products, natural surrounding environment as the context for physical expansion, and human or regional habitations dependent on architecture (Poortaheri et al., 2011). In the meantime, habitation or the presence of a human on earth and a proper environment for that have had various architectural responses in traditional and modern thoughts (Taheri, 2013). Housing has diverse conceptual aspects in that it is a shelter and physical place in its special concept that is considered a primary and basic requirement of households (Sojasi Ghidari et al., 2015). Besides habitation, rural housing is the manifestation of biological-livelihood methods (Mohammadiyeganeh et al., 2017). Not only the house works as a shelter in rural areas but also it functions as a place for keeping livestock and produced crops and a place for financial activities (Ghanbari, Ramezanzadeh Lasboyee & Masoom Poorsmakoosh, 2010). In fact, the formation of habitations is taken from different cultural-social (Gür, 2000), economic, and environmental (Usta, Onur, & Efe Ziyrek, 2012)

indicators and so, it demonstrates primitive cultural relations (Günce & Ertürk, 2008). Therefore, its recognition has a significant role in awareness of the present and future generations from their architecture, culture, and the way their principles are used in subsequent designs. The establishment of a rural house is based on some necessities raised from the ruling essence of the natural environment and humans.

Hence, the roots of this establishment can be assumed both in capabilities and in forces of the place and also in human behaviors which are often dependent on the formation context. Climatic conditions, natural environment properties, space's function, dominant traditions, formation of building in the environment, and cultural and social principles all influence the body of the rural house (Ibid, p. 3), (Alalhesabi & Raheb, 2008). In a physical definition, a house is a spatial amalgam of function, strength, and beauty in order to respond to the living requirements of dwellers. Besides covering this definition, a rural house has an organic structure based on the life of villagers. Thus, not only it meets biological needs but also it is considered the focal point of production and subsistence activities. Therefore, it bears a complex of diverse and numerous biological and livelihood functions (Balaban & San, 1988), (Sartipipour, 2013). As the physical realization of the house, physical dimensions are the most objective and material subjects in evaluation, analysis, and planning related to housing (Management & Planning Organization, 2004). Regarding the physical nature of intervening in rural housing, the physical aspect of housing possesses special importance compared to its other aspect. That is why it usually receives more heed in housing studies, analyses, and design. As the objective appearance, the physical aspect of housing is influenced by a complex of factors intervening in rural housing (Zargar & Hatami Khanghani, 2015). On the other hand, one of the most prominent symbols in recognition of habitation conditions is the attention to physical indexes and indicators of housing (Rabieifar et al., 2014) which is observed as a significant aspect in evaluation, analysis, and planning of housing (Sartipipour, 2012).

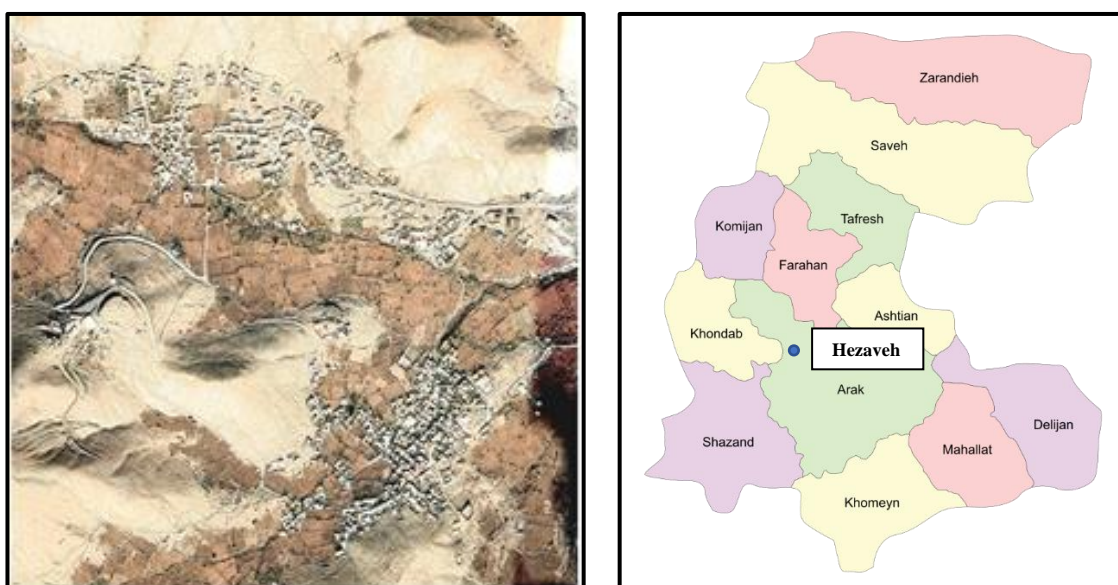
Depending on climatic and geographical diversity, rural habitations have different types (Jamini, et al. 2014). The creation of form, plan and orientation in vernacular houses are affected by natural factors (Almusaed, 2011). Each component of the habitation is obtained due to a necessity in connection to several cultural, social, economic, natural, historic, etc. factors in diverse forms (Askari Ranbari et al., 2016).

### 3. Research Methodology

#### 3.1. Geographical Boundary of Research

According to [figure 1](#), Hezaveh village is located in the rural district of “Amiriyeh”, one of the environs of the central district of “Arak County”, which is in 25 kilometers distance from the center of this county and longitude and latitude of 49.32 and 34.11 degrees respectively and sea level of 1800 meters. According to the census in 2016, its population is 1184 people. Its natural position is mountainous and located in the foothills. It is very cold in winter and moderates in

summer with an average temperature of 14 degrees Celsius. Most winds blow from west and east. The most amount of rain during the period of 1986 to 2011 is in November which is about 87.9 millimeters ([Mohammadnejad Hessari, 2015](#)). The most important water resource of the village is groundwater which exists in two forms underground aqueduct (Qanat) and a spring. The main jobs of inhabitants are gardening, agriculture, and animal husbandry and as sidelines, they are involved in service and industrial activities.



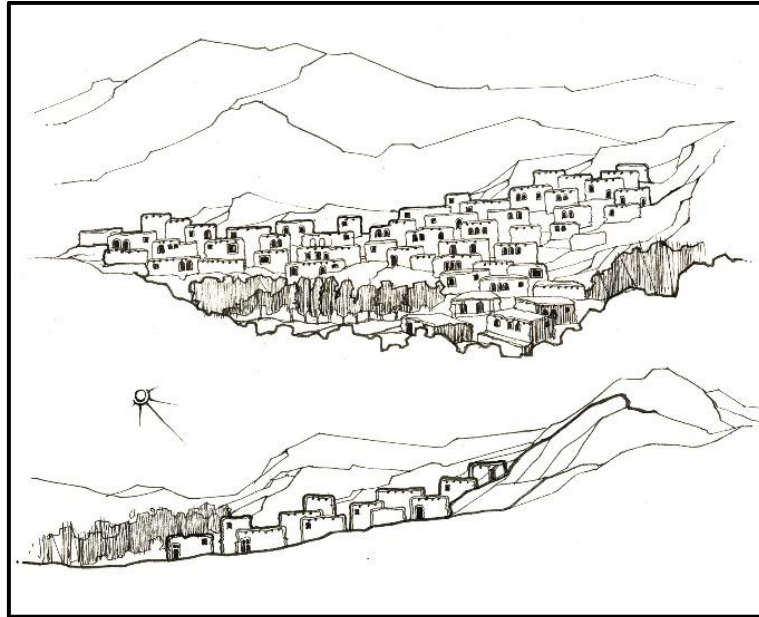
**Figure 1. Location & Aerial Image from Hezaveh Village;**

Source: Authors, 2021

One of the most significant properties of the village is its antiquity adjacent to many other works such as the tomb of Imamzadeh Sultan Seyyed Ahmad (related to the Safavid period) and Amir Kabir house (Qajar era). The village’s appellation is taken from the term “HezarAbeh” (thousand water) meaning there were plenty of headwaters in the village. Moreover, some believe the name comes from “Zav” which means valley and some are in consonance with the geography of the village ([Mohammadnejad Hessari, 2015](#)). The whole residential land use is about 243,211 square meters and it is about 32.03 percent of the whole area of land used in the village. Considering the village population in 2011, the residential per capita is 167.85 square meters (Ibid: 127). Due to the dominance of temperate to cold weather during the year, most habitations have been constructed flat

and facing south in order to take advantage of sunlight like what is illustrated in [figure 2](#). Walls are made out of adobe, stratum, and mud and their thickness are relatively high. The structure of houses is in a way that the main spaces are connected to each other through a linking space so that the energy waste reduces. Houses are mostly double-decker in which the lower level is dedicated to livestock and the upstairs is for the living of inhabitants.





**Figure 2. Hezaveh Village;**  
Source: Authors, 2021

Hezaveh village possesses a complicated fabric including adobe, stone, and brick houses that are sat stair-like on the slope of the hillside. Influenced by geographical factors and the existence of water, the architectural construction of the village is shaped into two main sections and concentrated in six neighborhoods. By including Imamzadeh, seven ethnic and cultural neighborhoods could be presumed.

The fabric of the village consists of six completely separated sections which are combined with the surrounding gardens. Houses are places adjacent to each other in an aggregated order. The passageways inside the village fabric are narrow and tortuous. However, the routes that connect the neighborhoods are relatively wide.

Physically, the existing buildings in the village are divided into three general following categories:

- Buildings entirely with vernacular structure and taken from environmental materials;
- Buildings with a mixture of local and non-local materials; and
- Buildings with non-local materials.

### **3.2. Methodology**

The type of design, construction technology and method of rural housing, dimensions, proportions, scale, and adaptation to interior and exterior conditions of the residential unit all demonstrate the level of influence and reinforcement of human relations with environmental facilities, conditions, and necessities that have been experimentally realized in the spatial structure of rural housing as principles, criteria, and quantities during the time

(Sartipipour, 2005). In the meantime, not only do the production method and livelihood of dwellers affect the number and quality of spaces' function inside the house but also they are heeded as prominent and fundamental factors due to their direct impact on the financial level of individuals, selection of materials type, house size, and building's decorations. Moreover, the whole floor area and more importantly, the net area of rural houses which are separated into rooms and other functional spaces, reveals the social and economic properties of rural habitations and the social base of the household that lives there.

About the reason why Hezaveh village in Markazi province was chosen, it is important to cite that Markazi province has an appropriate situation regarding the topic in Iran. Because it has various ethnicities and diverse climatic conditions. Among others, Hezaveh village with its old history and hidden values is a very proper village for the subject of the research. The reflection of natural and human environmental impacts on the body of Hezaveh residential architecture is conspicuous. In the present research, the methodology is based on an inductive approach, field survey, and documentary studies and then, the subject was described and analyzed. The research process consists of three main phases in this study:

- Introducing Hezaveh village and brief recognition of the physical environment;
- Selecting housing cases and field surveys; and
- Housing analysis from different aspects including structural diversity, spatial relations, using the type of premises, density, etc.

The first part of this process has a descriptive essence which is written based on documentary studies and library information. In the next step, the selection of cases was based on the reflection of

two types of variables resulting from the patterns of natural and human environments in the body of houses. These two variables are illustrated as indicators in different housing types:

**Table 1. Influential Variables on the Selection of Cases;**

Source: Findings of the Research, 2021

Patterns Caused by the Human Environment Reflected in the Housing		Patterns Caused by the Natural Environment Reflected in the Housing	
Variables	Wide & Varied Spatial Composition	Variables	Semi-compressed Plan in the Enclosed Yard
	Relatively Old Architecture		Openings with Relatively Large Dimensions
	Special Living & Production Spaces		The Main Orientation is Toward the Southeast

Since the research has a typological and context-based nature, all information about the studied cases is the result of field studies and all drawings of cases have been prepared by the authors. In the third section, all reasoning was a logical and inductive analysis accompanied by a conclusion. Finally, the result somehow represents the ruling pattern in the housing architecture of this village in a form of a table.

In the present research, the sample size is three traditional houses which were chosen among the traditional houses of the village that include more than 50 percent of the whole houses of the village. It should be mentioned that the research is not capable of considering more than this number. The variables related to the resulting patterns from the natural environment which are reflected in the body of houses are semi-compact plans in an enclosed yard, openings with relatively wide dimensions mostly orienting towards the southeast. The variables related to the resulting patterns from a human environment which are reflected in the body of houses consist of vast and diverse spatial combinations, relatively old architecture, and special livelihood and production spaces. They are obtained through observation in the body of buildings, surveys of cases, and analysis.

The analytical items in each case are going to be as follows:

- Analysis of housing climatic properties; including climatic space, construction materials, and building adjustment method;

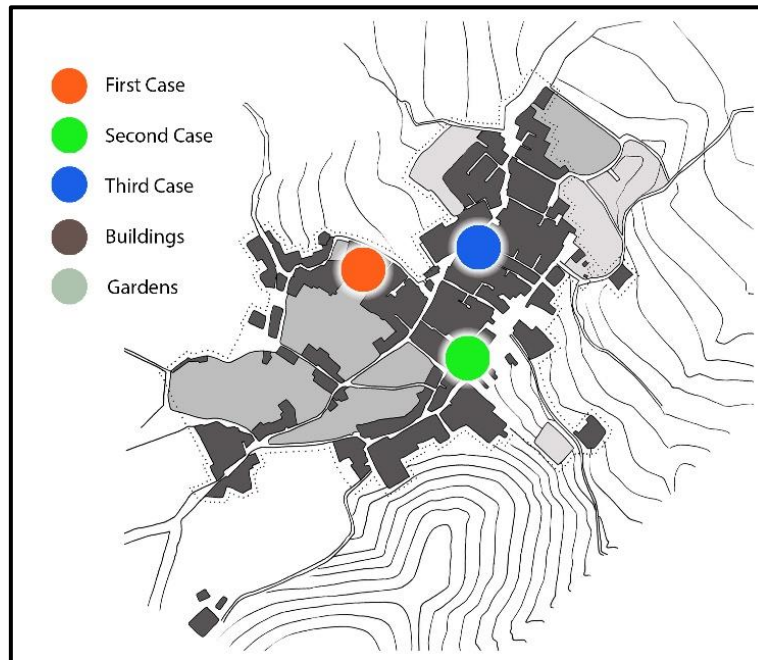
- Analysis of housing physical properties; including building structure, dimensions and proportions, energy supply sources; and
- Analysis of housing premises and space; including structural orientation, zoning analysis, and spatial and functional analysis.

Consequently, physical traits of rural housing in Hezaveh village have been studied in the forms of three standpoints:

- The logic of locating and expanding on the ground (context), orientation, vastness, and climatic indicators;
- Dimensions and proportions, surface, density, mass, and space; and
- Sub-spaces, building structure, construction technology, and zoning.

#### 4. Research Findings

Since it is not possible and essential to survey and present all rural houses and residential units in this research, taking a proper method for choosing the cases which it covers the dominant types of rural housing has a crucial impact on the quality of results and their validity. The initial survey of several houses in different neighborhoods of this village revealed three different physical types which are presented in three cases in [figure 3](#). Moreover, regarding the analysis of housing physical structure in the form of three selected cases, public, semi-public, and private zones and human and livestock spaces have been separately specified in each case by drawing plans and elevations:

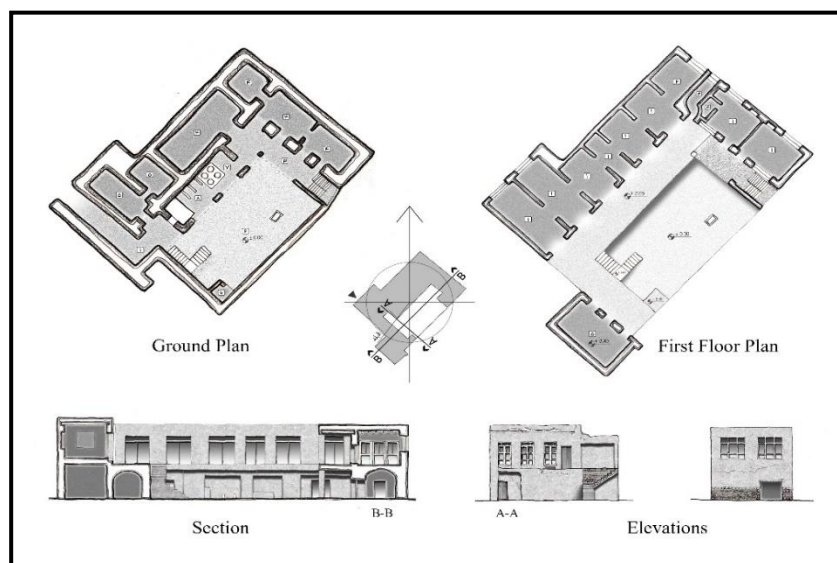


**Figure 3. Locations of Three Cases in Hezaveh Village**

Source: Authors, 2021

**First Case:** The first case of residential units in Hezaveh village is a house with an average combination of a household. The main jobs of dwellers are animal husbandry and gardening and parallel to them, they are also involved in other livelihood activities such as “cooking syrup”. The dwellers of this unit have a moderate level of social class and literacy. Relying on their livelihood traditions, their proper financial condition has led

to some extensions and modifications in the situation of the house. The major properties of this residential unit are its orientation toward the southeast, arrangement of spaces around a courtyard, functional diversity of spaces, and utilization of local patterns in construction. At the moment, five people in form of two households are living in this house.



**Figure 4. Ground & 1<sup>st</sup> Floor Plans besides Elevations & Section of 1<sup>st</sup> Case**

Source: Authors, 2021

**Table 2. Analysis of Housing Climatic Properties of 1<sup>st</sup> case**

Climatic Space	Yard	The south yard is approximately 8*16 square meters
	Porch	2.5 meters deep facing southeast, first floor 3 meters deep, facing south, first floor
	Underground	Does Not Have
Climate Materials	Crust	Clay, Stone
	Roof	Beams, boards, Branches, Mats & Clay with Straw Insulation
	The Floor	Stone with Mortar
Building Adjustment Method	Heating	Heated Seat (Korsi), Heater, Oil Lamp
	Cooling	Openings, Fan

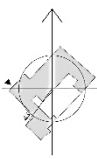
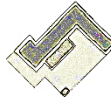








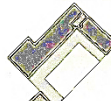










**Table 3. Analysis of Housing Physical Traits of 1<sup>st</sup> Case**

The Structure of the Building				Dimensions & Proportions	
Cover	Roof	Thatch		Surface of Earth	438 square meters
	The Floor	Soil, Cement, Stone			
Materials	Types	Carrier	Clay, Brick, Stone, Wood	The Surface of the Infrastructure	320.5 square meters
		Mortar	Clay Mud, Plaster & Soil, Cement Sand		
		Coated	Thatch, Plaster & Soil, White Plaster, Cement		
	Ceiling	Timber, Board, Mat, Waj, Clay		Number of Floors	Two Floors without a Basement
	Foundation	Stone & Mud Mortar			
	Wall	Brick, Clay, Stone			
Construction Technology	Bearing Wall with Wooden Cover, Brick Roof			Porch	2.5 meters deep, facing southeast, first floor 3 meters deep facing southwest, first floor
Structural Elements	Foundation	Masonry Foundation		Energy Supply Sources	
	Crust	Bearing Wall		Fuel	Oil, Firewood, Gas
	Ceiling	Flat Wooden Cover, Brick & Clay Roof			
The Level of & the Building the Yard	The Same Level & Above			Water Resources	Plumbing, Domestic Well
The Level of the Yard & the Passage	At the Same Level				
Equipment	8 Room, Kitchen, Barn, Warehouse, Corridor, Toilet, Bathroom, Oven, Juice-bark, Grapes Yard				



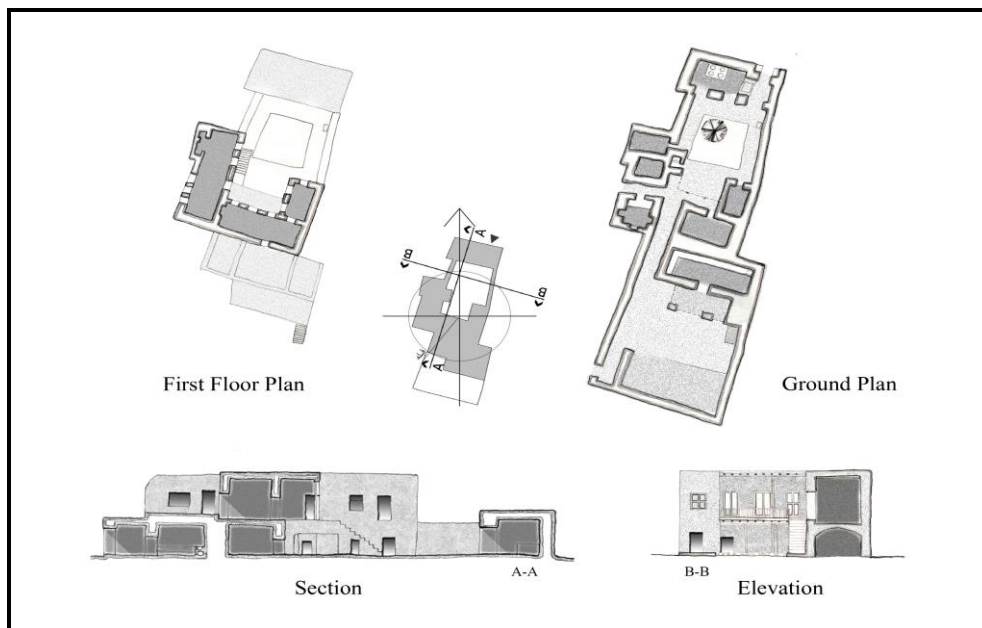
**Table 4. Analysis of Housing Premises & Spaces of 1<sup>st</sup> Case**

Source: Authors, 2021

Orientation	Map Type	Field Analysis	Spatial Analysis
	Ground Plan	 <ul style="list-style-type: none"> <li>Public Space </li> <li>Semi-Public Space </li> <li>Private Space </li> </ul>	 <ul style="list-style-type: none"> <li>Animal Space </li> <li>Human Open Space </li> <li>Human Space </li> <li>Animal Open Space </li> </ul>
	First Floor Plan	 <ul style="list-style-type: none"> <li>Public Space </li> <li>Semi-Public Space </li> <li>Private Space </li> </ul>	 <ul style="list-style-type: none"> <li>Animal Space </li> <li>Human Open Space </li> <li>Human Space </li> <li>Animal Open Space </li> </ul>
	Elevation- Section		

**Second Case:** It is a house with a small combination of a household. The main jobs of dwellers are animal husbandry and gardening and parallel to them, they are also involved in other livelihood activities such as “cooking syrup”. The dwellers of this unit have a low level of financial and social class and literacy. However, proper livelihood conditions in the past based on specific earning traditions and the building’s special and

old architecture assume a hidden originality inside it. The major properties of this residential unit are orientation toward Qibla, arrangement of spaces around a central courtyard, functional diversity of spaces, and utilization of local patterns in construction. Although its previous dwellers have abandoned this unit, two people are living in this house as a family right now.



**Figure 5. Ground & 1<sup>st</sup> Floor Plans Besides Elevation & Section of 2<sup>nd</sup> Case**

Source: Authors, 2021

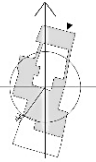
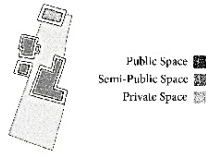
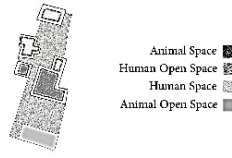
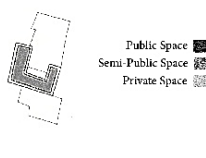
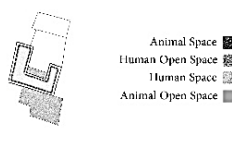
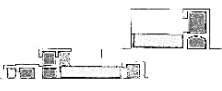

**Table 5. Analysis of Housing Climatic Properties of 2<sup>nd</sup> Case**

<b>Climatic Space</b>	<b>Yard</b>	The central courtyard is approximately 14 * 8.5 square meters
	<b>Porch</b>	2 meters deep, facing the north of the first floor
	<b>Underground</b>	Does Not Have
<b>Climate Materials</b>	<b>Crust</b>	Clay, Stone
	<b>Roof</b>	Beams, boards, Branches, Mats & Clay with Thatch Insulation
	<b>The Floor</b>	Stone with Mortar
<b>Building Adjustment Method</b>	<b>Heating</b>	Heated Seat (Korsi), Oil Lamp
	<b>Cooling</b>	Openings, Fan

**Table 6. Analysis of Housing Physical Traits of 2<sup>nd</sup> Case**

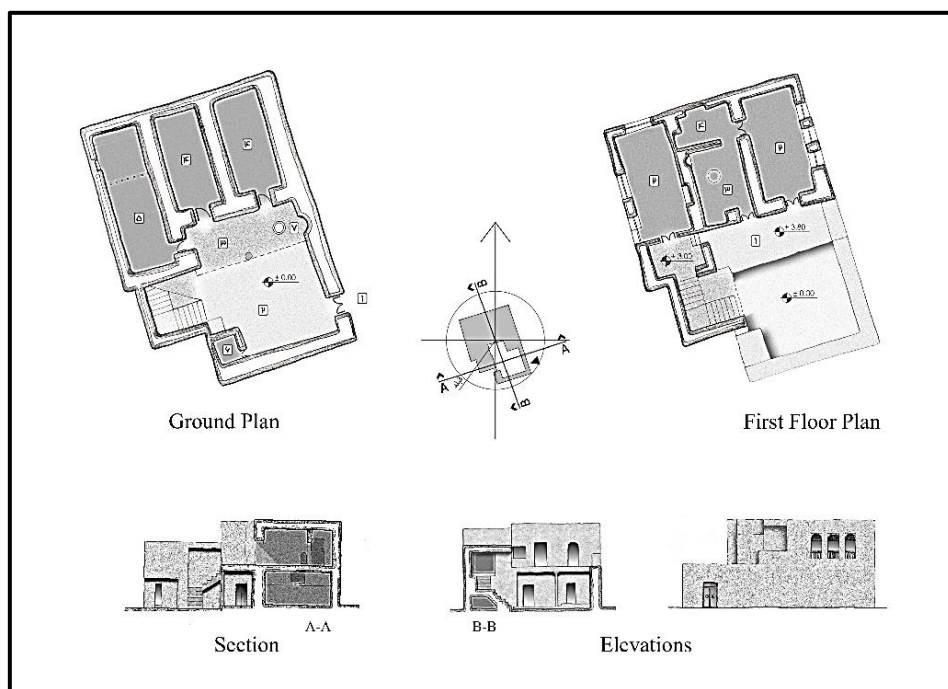
<b>The Structure of the Building</b>				<b>Dimensions &amp; Proportions</b>	
<b>Cover</b>	Roof	Thatch		Surface of Earth	553.5 square meters
	The Floor	Soil, Cement, Stone			
<b>Materials</b>	Types	Carrier	Clay, Stone, Wood	The Surface of the Infrastructure	314 square meters
		Mortar	Soil Mud, Plaster & Sand		
		Coated	Thatch, Plaster & Soil	Occupancy Percentage	56.7 percent
	Ceiling	Timber, Mat, Waj, Clay		Number of Floors	Two Floors without a Basement
	Foundation	Stone & Mud Mortar			
	Wall	Clay, Stone			
<b>Construction Technology</b>	Bearing Wall with Wooden Cover, Brick Roof		Wall Thickness	0.6 & 0.85 m	
			Openings	North, East	
<b>Structural Elements</b>	Bearing Wall with Wooden Cover, Brick Roof		Porch	2 meters deep, facing north, first floor	
	Foundation	Masonry Foundation		Energy Supply Sources	
	Crust	Bearing Wall		Fuel	Oil, Firewood, Gas
Ceiling	Flat Wooden Cover, Brick Roof				
<b>The Level of the Building &amp; the Yard</b>	The Same Level & Above			Water Resources	Plumbing,
<b>The Level of the Yard &amp; the Passage</b>	The Yard is Lower				
<b>Equipment</b>	Heating/Cooling				
	Seat heating, Heater, Oil Lamp/Fan				
	3 Room, Kitchen, Barn, Warehouse, Hallway, Toilet, Oven, Juice-bark				

**Table 7. Analysis of Housing Premises & Spaces of 2<sup>nd</sup> Case**  
Source: Authors, 2021

Orientation	Map Type	Field Analysis	Spatial Analysis
	Ground Plan		
	First Floor Plan		
	Elevation- Section		

**Third Case:** It is a house with a small combination of a household. The main job of dwellers is animal husbandry and parallel to it, they are also involved in other livelihood activities such as laboring. The dwellers of this unit have a low level of financial and social class and literacy. The major properties

of this residential unit are its orientation toward the southeast, dense arrangement of spaces, functional diversity of spaces, and utilization of local patterns in construction. Three people are living in this house as a family right now.



**Figure 6. Ground & 1<sup>st</sup> Floor Plans Besides Elevation & Section of 3<sup>rd</sup> Case**  
Source: Authors, 2021

**Table8. Analysis of Housing Climatic Properties of 3<sup>rd</sup> Case**


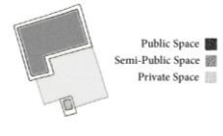

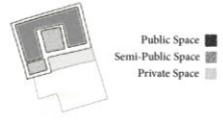
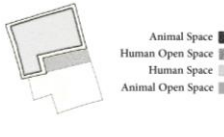

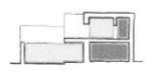
<b>Climatic Space</b>	<b>Yard</b>	The southern yard is approximately 7 * 6.5 square meters
	<b>Porch</b>	2.8 meters deep facing southeast, first floor
	<b>Underground</b>	Does Not Have
<b>Climate Materials</b>	<b>Crust</b>	Clay, Stone
	<b>Roof</b>	Beams, boards, Branches, Mats & Clay with Thatch Insulation
	<b>The Floor</b>	Stone with Mortar
<b>Building Adjustment Method</b>	<b>Heating</b>	Heated Seat (Korsi), Oil Lamp
	<b>Cooling</b>	Openings

**Table 9. Analysis of Housing Physical Traits of 3<sup>rd</sup> Case**

The Structure of the Building			Dimensions & Proportions		
<b>Cover</b>	Roof	Thatch	Surface of Earth	187 square meters	
	The Floor	Soil, Cement, Stone			
<b>Materials</b>	Types	Carrier	Clay, Stone, Wood	The Surface of the Infrastructure	141.5 square meters
		Mortar	Soil Mud, Plaster & Sand		
		Coated	Thatch, Plaster & Soil, White Plaster	Occupancy Percentage	75.7 percent
	Ceiling	Timber, Mat, Waj, Clay	Number of Floors	Two Floors without a Basement	
	Foundation	Stone & Mud Mortar			
	Wall	Clay, Stone			
<b>Construction Technology</b>	Bearing Wall with Wooden Cover, Brick Roof		Porch	2.8 meters deep, facing southeast, first floor	
	<b>Structural Elements</b>	Foundation	Masonry Foundation	Energy Supply Sources	
Crust		Bearing Wall		Fuel	Oil, Firewood
Ceiling		Flat Wooden Cover, Brick Roof			
<b>The Level of the &amp; the Building Yard</b>	The Same Level & Above		Water Resources	Plumbing,	
<b>The Level of the Yard &amp; the Passage</b>	The Yard is Lower				Heating/Cooling
<b>Equipment</b>	2 Room, Kitchen, Stable, Storage, Toilet, Oven				



**Table 10. Analysis of Housing Premises & Spaces of 3<sup>rd</sup> Case**  
Source: Authors, 2021

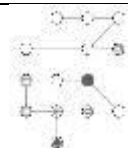



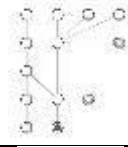

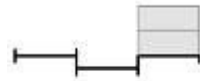


Orientation	Map Type	Field Analysis	Spatial Analysis
	Ground Plan		
	First Floor Plan		
	Elevation- Section		










**5. Discussion & Conclusion**

According to the performed studies, environmental, cultural, and economic factors are the factors that shape the body of architecture. The environmental factor is apparently more influential among them. On one hand, these factors create a kind of architecture and on the other hand, provide a context for continuity and conveyance of values in order to be used in future plans in the form of

patterns. In the meantime, housing is a sample that can represent these patterns as a fundamental type and simple form of a physical body. As a sample of existing habitation in Hezaveh village, the investigation of three cases of housing in the village can be representative of housing physical traits. The pattern of spatial relations, context, the number of floors, and the covering of houses in these three cases are specified in [table 11](#).

**Table 11. Housing General Pattern of Three Cases in Hezaveh Village**

Cases	The Age & Quality of the Building	Number of Floors	The Pattern of Spatial Relations	Levels	Number of Floors	Roof Cover
The First Case	More than 100 Years Old, Restored	Ground Level				
		First Level				
The Second Case		Ground Level				

Cases	The Age & Quality of the Building	Number of Floors	The Pattern of Spatial Relations	Levels	Number of Floors	Roof Cover
The third Case		First Level				
		Ground Level				
		First Level				

In response to the questions of the research besides what is mentioned in table 11, due to the location of this village in a cold climate, it can be expressed that houses often have a central courtyard and are introverted, the ratio of the outer skin of the building to the whole volume of the building is low, courtyards are relatively small, walls are thick, the general form of houses is mass-like, spaces are located in two adjacent sides and a courtyard between them or in different floors, and buildings mostly have two floors. Moreover, the studies reveal the relatively common spaces in them in which major spaces of a house are a complex of living spaces including room, kitchen, water closet, bathroom, porch, and livelihood spaces such as storage, oven, barn, syrup cooking room, and grape room. It should be cited that the

conclusion has not been with this method in previous similar studies. But, it was mostly the design of a new type in the end and no pattern-making has been the result. In the end, it is suggested that future studies investigate or compare villages with different environmental and human conditions.

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#### Authors' contributions

The authors equally contributed to the preparation of this article.

#### Conflict of interest

The author declare no conflict of interest.

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## تحلیل ویژگی‌های کالبدی مسکن روستایی جهت دستیابی به الگوی معماری آن (مورد مطالعه: روستای هزاوه، استان مرکزی)

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### چکیده مبسوط

#### ۱. مقدمه

جغرافیای طبیعی ایران، گویای بسیاری از واقعیت‌های محیطی و نقش آن در شکل‌گیری، استقرار جوامع انسانی و تکوین فعالیت و معیشت آن‌هاست. از این رو، مکان‌یابی، استقرار، شکل‌گیری و توسعه کالبدی شهرها و روستاهای ایران در درجه اول تابع شرایط محیطی و جغرافیایی آن‌هاست.

روستای هزاوه در استان مرکزی، از جمله مناطقی است که معماری و بافت ارزشمند روستایی خود را حفظ کرده؛ به علاوه این روستا از جهات مختلف دیگر نیز حائز اهمیت است. از این رو پژوهش حاضر با هدف بررسی ویژگی‌های کالبدی مسکن و سکونت‌گاه در روستای هزاوه با تحلیل سه نمونه‌ی منتخب از مسکن و با رویکردی استقرایی، بر پایه‌ی مطالعات اسنادی همراه با روش‌های توصیف و تحلیل به موضوع پرداخته و بدین ترتیب پرسش‌های زیر در ارتباط با آن مطرح گردیده است:

- الگوی سکونت در روستای هزاوه به چه صورت است؟

- ویژگی‌های کالبدی و اقلیمی مسکن در روستای هزاوه چیست؟

#### ۲. ادبیات نظری تحقیق

محیط روستایی در برگیرنده‌ی سه عنصر اصلی کالبدی یعنی زمین برای تولیدات کشاورزی، محیط محاط‌شده‌ی طبیعی به منزله‌ی بستر توسعه‌ی کالبدی و سکونت‌گاه‌های انسانی یا ناحیه‌ی وابسته به معماری است. مسکن روستایی علاوه بر سکونت، تجلیگاه شیوه‌های زیستی- معیشتی است.

برپایی خانه‌ی روستایی بر پایه‌ی اقتضائاتی برآمده از سرشت محیط طبیعی و انسانی حاکم بر آن است.

لذا ریشه‌های این برپایی را باید در قابلیت‌ها و نیروهای مکان از یک طرف و رفتارهای انسانی از طرف دیگر دانست که اغلب وابسته به بستری است که در آن شکل می‌گیرد، شرایط اقلیمی، ویژگی‌های محیط طبیعی، کارکرد فضاها، سنت‌های غالب، شکل‌گیری بنا در محیط، اصول فرهنگی و اجتماعی بر کالبد خانه روستایی تأثیرگذار است. ابعاد کالبدی به عنوان تبلور فیزیکی مسکن، عینی‌ترین و مادی‌ترین موضوع در ارزیابی، تحلیل و برنامه‌ریزی‌های مرتبط با مسکن است. با توجه به ماهیت کالبدی مداخلات در مسکن روستایی، وجه کالبدی مسکن در مقایسه با وجوه دیگر از اهمیت خاصی برخوردار بوده و به طور معمول در مطالعات، تحلیل‌ها و طراحی مسکن بیشتر مورد توجه قرار می‌گیرد. وجه کالبدی مسکن به عنوان نمود عینی متأثر از مجموعه عوامل دخیل در مسکن روستایی است. شکل‌گیری فرم، پلان و جهت‌گیری در خانه‌های بومی تحت تأثیر عوامل طبیعی می‌باشد. هر یک از اجزای مسکن بنا به یک ضرورت و در رابطه با عوامل متعدد فرهنگی، اجتماعی، اقتصادی، طبیعی، تاریخی و غیره به اشکال گوناگون حاصل شده است.

#### ۳. روش تحقیق

در پژوهش پیش‌رو، روش تحقیق بر پایه رویکردی استقرایی و مبتنی بر برداشت‌های میدانی و مطالعات اسنادی استوار بوده و به توصیف و تحلیل موضوع پرداخته است.

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بنیادین و شکل نابی از یک محیط کالبدی دانست که نمایانگر این الگوها خواهد بود. به دلیل اقلیم سرد منطقه، خانه‌ها غالباً درونگرا و دیوارها قطور هستند. در ضمن بررسی‌ها نشان‌دهنده‌ی فضاهای نسبتاً مشترکی در آن‌هاست.

#### ۵. بحث و نتیجه‌گیری

مطابق با مطالعات انجام‌شده، عوامل محیطی، فرهنگی و اقتصادی عواملی هستند که کالبد معماری را شکل می‌دهند و در میان آن‌ها، عامل محیطی به شکل بارزی مؤثر است. در این روستا به دلیل قرارگیری در اقلیم سرد، خانه‌ها اغلب دارای حیاط مرکزی و درونگرا هستند، نسبت پوسته‌ی خارجی بنا به کل حجم بنا کم، حیاط‌ها نسبتاً کوچک و دیوارها قطور هستند، شکل کلی خانه‌ها به صورت توده و فضا در دو ضلع مجاور هم به همراه حیاط بین آن‌ها، یا در طبقاتی مجزا و اغلب از دو طبقه تشکیل شده‌اند. ضمناً مجموعه‌ای از فضاهای زیستی شامل اتاق، مطبخ، توالی، حمام، ایوان و فضاهای معیشتی شامل انبار، تنور، طویله، شیرپزخانه و انگورخانه از جمله عمده فضاهای خانه هستند.

**کلیدواژه‌ها:** ویژگی‌های کالبدی، مسکن روستایی، الگوی معماری، هزازه، استان مرکزی.

#### تشکر و قدردانی

پژوهش حاضر حامی مالی نداشته و حاصل فعالیت علمی نویسندگان است.

فرآیند تحقیق در پژوهش حاضر شامل سه مرحله اصلی است: (الف) معرفی روستای هزاره و شناخت اجمالی محیط کالبدی روستا؛ (ب) انتخاب نمونه‌های مسکن و برداشت میدانی؛ (پ) تحلیل مسکن از ابعاد مختلف شامل تنوع ساختاری، روابط فضایی، نوع بهره‌برداری از عرصه و اعیان، تراکم و غیره. بخش نخست این فرآیند، ماهیتی توصیفی دارد که براساس مطالعات اسنادی و برپایه اطلاعات کتابخانه‌ای به رشته تحریر در آمده است. در گام بعدی انتخاب نمونه‌ها بر اساس بازتاب دو دسته متغیر ناشی از الگوهای محیط طبیعی و محیط انسانی در کالبد مسکن می‌باشند که بصورت شاخص در گونه‌های مختلف مسکن مشاهده شده‌اند. در بخش سوم نیز عمده استدلال‌ها بصورت تحلیل منطقی و استقرایی با یک جمع‌بندی همراه بوده است که در نهایت، نوعی الگوی حاکم بر معماری مسکن این روستا را در قالب یک جدول نمایش می‌دهد.

#### ۴. یافته‌های تحقیق

بررسی نمونه‌های متعدد مسکن در این روستا در محلات مختلف آن، سه نوع کالبد متفاوت را در آن متمایز ساخت. همچنین با توجه به تحلیل ساختار کالبدی مسکن در قالب سه نمونه منتخب، عرصه‌های عمومی، نیمه‌عمومی و خصوصی و فضاهای انسانی و دامی در هر یک از نمونه‌ها در قالب پلان و نما به تفکیک مشخص شده است. یافته‌های پژوهش نمایانگر چگونگی توجه به ویژگی‌های کالبدی سکونت‌گاه، متناسب با عوامل محیط طبیعی و انسانی و شکل‌گیری مسکن بر مبنای آنها است. لذا می‌توان مسکن را نوع



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