



Spatial Organization in Traditional Residential Architecture: A Case Study of Lariha House in Iran

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Abstract

The theoretical framework of this study is based on Pirnia's five principles, which hold a significant place in Iranian architectural literature. These are human-centeredness, introversion, self-sufficiency, simplicity, and structural knowledge/proportion. The study aims to examine the core principles and spatial organization of traditional Iranian residential architecture through the example of the Lariha House, located in a hot-dry climate zone. Using a qualitative research method, the spatial elements (such as courtyard, iwan, room, wind tower, and sardab) are analyzed in relation to these principles. The building's layout prioritizes comfort, privacy, climate adaptability, and flexibility. This reflects the potential of traditional architecture to inform contemporary housing design. Accordingly, the study highlights the importance of preserving and reinterpreting local architectural values in modern design.

1. INTRODUCTION

Traditional architecture is a rich field of knowledge that encompasses not only the structural forms of the past but also the reflections of climatic characteristics and the cultural and social values of society in physical space. Especially the traditional residential architecture of Iran, with its multilayered structure, continues to inspire contemporary architecture on both the formal and conceptual levels. A systematic examination of this architectural heritage offers significant contributions to contemporary design processes.

Understanding the spatial organization of traditional Iranian houses requires a comprehensive perspective on their socio-cultural background and environmental context. Although researchers such as Ghobadian, Memarian, and Qayyoomi Bidhendi have contributed to the literature with cultural, climatic, and critical perspectives, Pirnia's work forms the foundation in defining the elements of Iranian traditional architecture [1, 2, 3, 4, 5]. Mohammad Karim Pirnia's five principles (human-centeredness, introversion, self-sufficiency, avoidance of excess, and construction knowledge/proportions) offer the most systematic theoretical framework.

The main objective of this study is to analyze the spatial organization of traditional Iranian architecture through the example of the Lariha House in the city of Yazd, a representative case of residential architecture in a hot-dry climate. Using Pirnia's principles as the main theoretical perspective, the study examines how these values are embodied in the design elements, spatial hierarchy, and environmental adaptations of the house. In addition, the study includes a brief comparative evaluation between traditional and contemporary housing models, emphasizing how selected traditional spatial strategies can contribute to sustainable and culturally sensitive design today.

In this context, the study focuses on the following key research questions:

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- How are the traditional architectural principles suggested by Pirnia reflected in the spatial organization of the Lariha House?
- How can these principles reinterpret the spatial organization of contemporary housing?
- How can conceptual transitions be established from traditional architecture to contemporary housing design?
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In this study, the term “contemporary architecture” refers to the post-Islamic Revolution period (1979–present) in Iran, focusing on housing projects developed in recent decades in Yazd.

2. THEORETICAL FRAMEWORK

2.1. Spatial Organization

In an architectural context, the spatial organization refers to the design of space patterns where user behavior occurs, arranged with dimensional and conceptual variety [6]. In this process, social structures and contextual conditions are more influential than the designer’s personal choices.

Traditional architecture evolves by adapting to a region’s geographical, climatic, and cultural conditions. It is shaped by local materials and traditional methods, focusing more on function than form. Therefore, it reflects both the local culture and the lifestyle of its inhabitants.

Evaluating the spatial organization in traditional buildings requires considering cultural values, social relations, and belief systems. Spatial arrangements influence user behavior and express cultural identity through space [7].

2.2. Pirnia’s Principles in Iranian Architecture

The five principles developed by Mohammad Karim Pirnia through a scientific and historical methodology have gained wide acceptance in Iranian architectural literature. These principles have been frequently cited by architects, scholars, and researchers working on traditional architecture. Despite their broad influence, no alternative framework offering a comparably systematic and comprehensive set of design principles has been proposed to date.

For example, Ardalan and Bakhtiar, in their seminal work *The Sense of Unity: The Sufi Tradition in Persian Architecture*, interpret Iranian architecture through the lens of Sufi philosophy, particularly the notion of “unity in multiplicity” [8]. While their approach provides valuable symbolic and philosophical insights, it does not constitute a structural or technical framework equivalent to that of Pirnia.

Similarly, Memarian, an architect and scholar who studied under Pirnia, has produced extensive research on traditional Iranian housing typologies, Islamic architecture, and vernacular design elements. Although he frequently refers to Pirnia’s five principles in his writings, he does not propose a new or alternative set of principles but rather elaborates and builds upon Pirnia’s foundational ideas [2, 4].

Given this context, the present study adopts Pirnia’s five principles as its primary theoretical framework. These principles are explained below, based on Pirnia’s original publications and related scholarly interpretations.

2.2.1. Human-Centered Design (*Mardomvari*)

The term *Mardomvari* is derived from the Persian word *Mardom*, meaning “people.” It refers to the alignment of design with human scale and needs. In traditional Iranian architecture, this principle extends beyond physical dimensions. It includes user behavior, lifestyle, and social relationships [4, 5]. Design elements are shaped with attention to privacy, neighborly relations, and livability. Architecture is viewed not only as a technical field but also as an art that serves human life. Therefore, creating spaces that adapt to user actions is a primary goal. This principle can be observed in examples such as Persepolis. In this

complex, the king's private areas are small and simple, while ceremonial halls are large and grand, reflecting spatial design based on function [3].

2.1.2. Introverted Design

In traditional Iranian architecture, introversion refers to organizing spaces around a central courtyard. This layout limits visual interaction with the outside while enhancing privacy and climate comfort indoors. The prevalence of hot and dry climates, lack of natural greenery, and harsh sunlight in Iran contributed to the development of courtyard houses. The courtyard, called *Hayat-markazi* or *Miyan-sera*, offers visual richness and creates a cooling microclimate [1, 4]. Introversion is shaped not only by climate but also by religious and cultural values. Concepts such as privacy, modesty, and contemplation support inward-focused planning. Spatial divisions based on gender further influence this layout. In traditional Iranian houses, introverted design reflects both physical needs and social structures [2].

2.2.3. Self-Sufficiency

This principle emphasizes the use of local materials and available resources in construction. Architects sourced materials from nearby areas to speed up the building process and enhance harmony with the environment. A strong example is Persepolis (*Takht-e Jamshid*), which was built using stones from its surroundings. Similarly, one of Iran's oldest mosques, the Fahraj Mosque, used local thistles instead of straw for durability, both technically and biologically. However, quality was prioritized over locality, and materials were also sourced from distant areas when necessary. This approach shows that traditional construction was both practical and environmentally responsive [4, 5].

2.2.4. Avoidance of Excess (Simplicity)

This principle promotes simplicity and functional design by avoiding unnecessary decoration and spatial waste. In the traditional Iranian architecture, each element must serve a function, look appealing. Purely visual elements such as statues or reliefs are absent, reflecting both architectural logic and Islamic beliefs. The same idea applies to wall finishes: materials are chosen for durability and purpose rather than appearance. In this approach, every detail meets a need. Unnecessary size or ornamentation is seen as wasteful, and functionality and simplicity are prioritized [9].

2.2.5. Construction Knowledge and Proportional Harmony

Traditional Iranian architecture values aesthetics through technical knowledge, structural balance, and proportional design. The principle of *Niyareş* and *Peymun* reflects this approach. *Niyareş* refers to structural calculations, building techniques, and material knowledge, while *Peymun* refers to modular proportions used between parts of a building [10]. This proportional system ensured both aesthetic value and structural safety, relying on tested values instead of guesswork. Even builders in small towns could achieve the same quality as architects in large cities. This principle enabled harmony between structure and design, blending technical precision with artistic sensibility [3, 4, 11].

In this study, Pirnia's five principles are used to evaluate how the values embedded in traditional Iranian architecture are reflected in the spatial organization of the Lariha House in Yazd.

2.3. Climatic Context of Traditional Architecture in Iran

Climate is one of the most influential factors shaping spatial organization in traditional architecture. Each climatic region has unique architectural responses and spatial qualities. Iranian traditional architecture, examined in this study, is also strongly shaped by climatic factors [12].

Iran, due to its vast and topographically diverse territory, is divided into four major climatic zones: temperate-humid (north), cold-dry (mountainous areas), hot-dry (central plateau and desert regions), and hot-humid (southern coasts). Each of these zones has developed distinct architectural responses shaped by local environmental conditions, available materials, and cultural practices [1, 13].

Understanding the environmental context of traditional architecture is crucial for analyzing its' spatial organization and design strategies. Climatic factors such as temperature range, humidity, solar radiation, wind patterns, and precipitation directly influence building orientation, massing, material selection, and passive ventilation systems [1, 2]. Accordingly, traditional Iranian architecture showcases a variety of spatial and structural adaptations developed over centuries to ensure environmental comfort and sustainability.

The below table summarizes the main climatic regions of Iran, outlining their dominant environmental features and corresponding architectural responses (Table 1).

Table 1. Climatic zones of Iran and corresponding architectural strategies.

Climatic Zone	Main Climatic Features	Urban Texture	Architectural Form and Spatial Layout	Passive Cooling Strategies
Temperate-Humid (Southern Caspian Coast)	- High rainfall - High humidity - Low temperature variation	- Open settlements - Wide distance between buildings - Wide streets and open areas	- Outward-facing plans - Elevated buildings - Sloped roofs, wide eaves	- Natural ventilation - Use of sea breeze - Rainwater control via sloped roofs
Cold and Dry (Alborz and Zagros Mountains)	- Long, harsh winters - Heavy snowfall - Low humidity - High temperature variation	- Compact settlements - Attached structures - Narrow streets - Sun orientation	- Inward-facing structures - Cubic/rectangular forms - Thick walls, small openings, low ceilings	- Thick walls for insulation - Snow on flat roofs as insulation - Sun orientation
Hot and Dry (Desert Regions)	- Very low rainfall - Very low humidity - Hot days, cold nights - High temperature variation	- Closed, compact texture - Shaded, winding streets with high walls	- Fully introverted - Central courtyards - High ceilings, windcatchers, basements - Domes/vaults	- Windcatchers (badgir) - Cool basements - Shaded courtyards - Natural airflow
Hot and Humid (Persian Gulf Coast)	- High temperature - High humidity - Low rainfall - Low temperature variation	- Semi-open texture - Controlled gaps between buildings - Settlements parallel to the coast	- Semi-introverted - High ceilings - Iwans and windcatchers - Service areas on ground floor	- Shading iwans - Perforated parapets on flat roofs - Windcatchers - Bidirectional airflow

The hot-dry zone covers a large part of the country and defines the basic characteristics of traditional Iranian architecture. In this zone, sunlight is strong and direct throughout the year. The northern, western, and southern slopes are semi-arid, while the central, eastern, and southeastern plateaus are desert regions. Cities such as Tehran, Mashhad, Isfahan, and Shiraz belong to the semi-arid zone; Zahedan and Yazd are in the desert zone. Clear skies and low humidity lead to sharp temperature differences. Key climatic features of this zone include low rainfall, low humidity, dry summers, cold winters, sparse vegetation, and dust storms [1, 13]. In this study, courtyard houses located in the hot-dry zone, which covers much of the country, are analyzed.

Although the hot and dry climate zone encompasses a vast area of Iran, the city of Yazd has been selected as the focus of this study due to its exceptionally well-preserved historical urban fabric and its' concentration of architecturally significant residential buildings. The selected case study, Lariha House, exemplifies the region's climatic architectural responses in a comprehensive and representative manner.

3. METHOD

This study adopts a qualitative case study approach to investigate the spatial organization of traditional Iranian residential architecture within its cultural and climatic context. The analysis focuses on the Lariha House in Yazd, a representative example of hot-dry climate architecture, selected for its well-preserved historical character and architectural richness.

The research involved a detailed examination of the spatial organization and architectural components of the house, using available plans, historical documentation, and photographic materials. These sources were utilized not only for illustration but also as analytical tools for understanding spatial hierarchy, functional distribution, and environmental strategies.

Following this analysis, the findings were interpreted through Pirnia's five principles to establish a theoretical perspective and assess how these values are reflected in the physical characteristics of the case.

Finally, the study includes a comparative reflection on contemporary housing in Yazd, discussing the differences in spatial organization, climate adaptability, and cultural integration to highlight how traditional strategies can inform sustainable and context-sensitive design today.

4. FINDINGS

As previously emphasized, the climatic conditions, along with cultural and social structures, play a defining role in shaping the spatial organization of traditional Iranian houses. In this context, the Lariha House, characterized by a central courtyard layout and an inward-oriented spatial typology, was selected as the case study. Constructed in 1864 during the Qajar era, this historically and architecturally significant building is listed on Iran's National Heritage Register [14]. Covering a total area of approximately 1,700 square meters, with about 1,200 square meters of enclosed space, it served for many years as a residence for prominent families in the region. The house includes three courtyards, six residential units, iwans (terraces), multifunctional rooms, a main entrance door, and an entrance vestibule (Hashti), all of which are characteristic elements of traditional Iranian architecture. Its design reflects principles such as privacy, functional hierarchy, and balanced transitions between spaces, as well as an emphasis on climatic adaptation.

The analysis presented in this section is organized into three steps. First, the spatial organization and main components of the Lariha House are examined to understand its functional and environmental logic. Second, the findings are evaluated within the framework of Pirnia's five principles, supported by a systematic table and visual references. Finally, a comparative discussion with contemporary housing in Yazd highlights key differences and explores how traditional design strategies can inform sustainable architectural practices today.

4.1. Seasonal Adaptability

Living spaces in the house were deliberately arranged around the courtyard in relation to sunlight and heat. This configuration is a common strategy in residences located in hot-dry climate zones. On the southern side of the courtyard lies the summer living area (*Tabestan-neshin*), which includes high-ceilinged rooms, a semi-open porch (*Eyvan*), a basement, and a windcatcher (*Badgir*), all serving as cooling elements. These areas, due to their deeper placement and shaded conditions, offer cooler interior environments.

In contrast, the northern side accommodates the winter living area (*Zemestan-neshin*), with its shallower depth which receives more direct sunlight and thus provides thermal comfort during the colder months. Additionally, there are seasonal sections located on the eastern and western sides of the courtyard that benefit from morning or afternoon sun exposure, making them suitable for spring and autumn use. While such transitional spaces are observed in some other traditional houses, their usage is generally more limited (Figure 1).

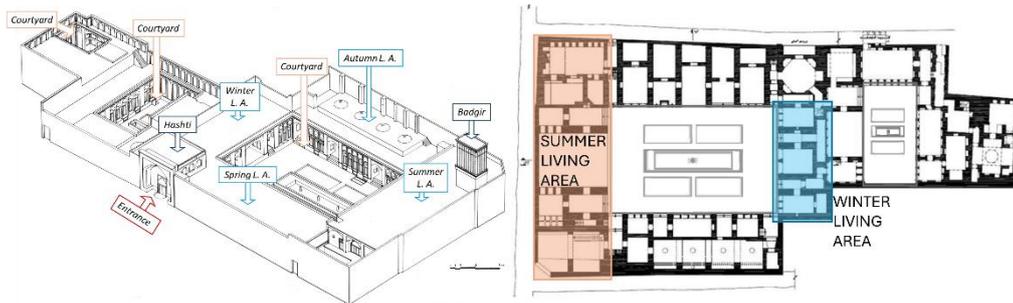


Figure 1. Aerial perspective and floor plan of Lariha House.

These shifts in space usage according to different seasons and times of day demonstrate the high adaptability of spaces. For example, during the summer, the southern rooms are used in the morning, the basement at noon, and the roof in the evening; while in winter, the northern rooms and the small, corner spaces with limited openings are preferred.

The hot-dry climate of Yazd has significantly shaped the architectural solutions applied in traditional houses. Figure 2 summarizes the relationship between climatic challenges, the spatial elements used to address them, and the corresponding architectural strategies.

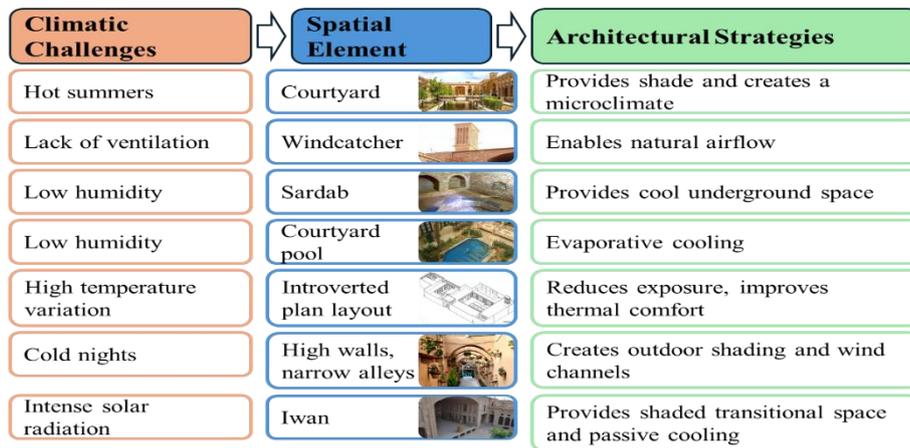


Figure 2. Climatic challenges of hot-dry regions and corresponding spatial and architectural strategies in traditional Iranian houses.

4.2. Spatial Planning Scheme

As a cultural reflection of spatial organization, the Enderuni–Biruni system, which separates household members and guests spatially, stands out. Biruni refers to the public areas of the house, located near the entrance, where male guests are hosted, while Enderuni defines the private spaces designated for women and family life. This system not only preserved privacy but also enabled hospitality. To implement this separation, a plan scheme with two or more courtyards was commonly preferred. Clear separation was achieved through distinct access from the entrance to each courtyard (Figure 3).



Figure 3. Spatial organization of the Lariha House showing main functional zones: courtyard, entrance, public quarters (*biruni*), private family quarters (*enderuni*) and wind tower.

4.2.1. Entrance

In traditional courtyard houses, especially those with central courtyards, all forms of external access were carefully controlled to protect the privacy of family life and to keep women's private spaces out of sight. This strict understanding of privacy directly influenced the entrance arrangement and created a spatial hierarchy. As in the case of the Lariha House, the entrance typically consists of three main elements: the main entrance gate (*Sardar*), the entrance hall (*Hashti*), and the corridors (*Dalan*). This tripartite system establishes a distinct transition between the exterior and interior spaces of the house.

The exterior façade is composed of brick walls plastered with a mixture of clay, straw, and water. While the façade presents a plain silhouette toward the street, the main entrance features a more elaborate design. Rather than a flat doorway, it is formed as a three-dimensional, semi-enclosed space that creates a sense of volumetric depth. This design breaks the two-dimensional perception of the outer walls and offers an inviting transitional space (Figure 4).

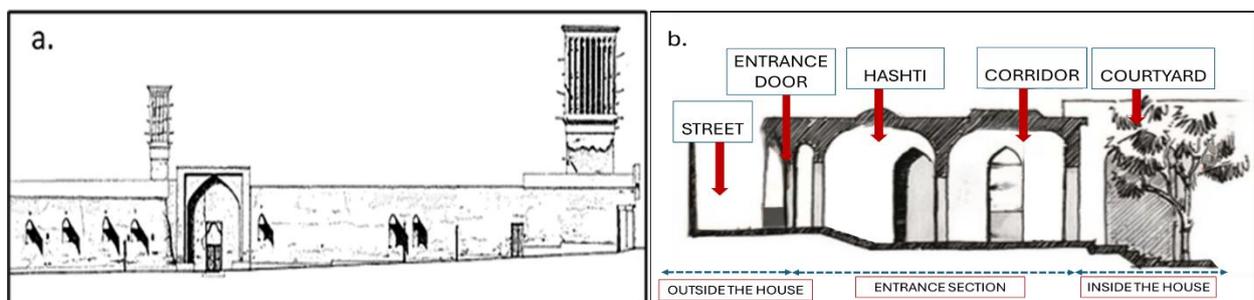


Figure 4. a. Exterior view of Lariha House, b. Entrance section creating a hierarchical arrangement [15].

The entrance gate opens into a space known as *Hashti*, located below street level. Derived from the Persian word *Hasht*, meaning “eight,” this space is typically octagonal in plan, although variations such as square or rectangular layouts also exist. The *Hashti* functions as a transitional zone between the outer gate and the corridors, defining the boundary between the exterior and interior of the house. From this space, the courtyard is accessed through narrow and winding corridors called *Dalan*.

Additionally, the *Hashti* served as a temporary waiting area or a short-term reception space, with seating niches embedded into the walls for guests. As a significant design feature, there is no direct linear path from the entrance gate to the courtyard; instead, the transition is arranged in an L-shaped configuration (Figure 5). This layout prevents direct visual access to private areas from entering, thus enhancing privacy.



Figure 5. Entrance of Lariha House.

4.2.2. Courtyard (Hayat)

Inward-facing houses, which have no connection to the outside world other than the entrance gate, direct all their openings toward the interior courtyard, referred to as Hayat in Persian. These courtyards vary in number, size, the geometry of pools and gardens they contain, and the types of plants selected. In the Lariha House, there are three interior courtyards of different sizes, with enclosed spaces arranged around them (Figure 6).



Figure 6. From left to right: The largest, middle, and smallest courtyards of Lariha House and their positions on the plan.

Courtyards are among the key components of traditional houses, enhancing climatic comfort and forming the central core of the structure. As the social center of the house, the courtyard also serves as a visual focal point and a functional transitional space for the surrounding rooms. In terms of circulation, access to many parts of the house is provided directly through the courtyard. Likewise, the natural lighting and ventilation needs of the interior spaces are largely met through the courtyard.

Courtyards also play an important role in the passive cooling. During morning and afternoon hours, the shade cast on the ground and walls, along with the evaporation from soil, plants, and water within the courtyard, helps balance the dry air and improves its thermal performance. This effect becomes especially significant at night, when temperatures drop, turning the courtyard into a natural cooling system.

The central courtyard serves as a multifunctional living space that provides a more livable microclimate in contrast to the harsh desert climate. In the Lariha House, a large wooden platform (*Sedir*) is placed in the center of the largest courtyard, with its legs submerged in the pool. This platform was actively used on summer nights for dining, conversation, and relaxation, benefiting from the cool and humid air. Additionally, placing the platform's legs in water helped protect the occupants from dangerous scorpions, which are commonly found in the region.

4.2.3. Rooms

In traditional domestic architecture of Iran, the rooms (*Otaq*) are enclosed, multifunctional living spaces. Instead of distinct areas such as living rooms, bedrooms, or dining rooms, these rooms were used flexibly to serve various functions depending on the time of day and the needs of the inhabitants. Room names were determined based on the number of double openings, known as Door-Window (*Dar-Panjere*), that opened onto the courtyard. Accordingly, rooms with three doors (*Se-Dari*), five doors (*Panj-Dari*), and

seven doors (*Haft-Dari*) exist. In the Lariha House, there are a total of 22 rooms arranged around three different courtyards. These rooms are positioned approximately three steps above the courtyard level.

The most frequently used rooms, the three-door rooms, served as bedrooms at night and were multifunctional spaces used as living rooms, dining rooms, children's rooms, or guest rooms during the day. This flexible use was made possible by fully carpeting the rooms, avoiding large furniture, and storing space-consuming items in built-in wardrobes (*Pastoo*) or wall niches.

These rooms are designed to be human scaled according to the family's lifestyle and needs. Niches and shelves in the walls are placed at accessible heights, making them easily reachable while seated or standing.

Rooms with five or seven doors were mainly used for receiving guests. While the private three-door rooms of the homeowner feature simple designs, these guest rooms are larger and more elaborate. In the northwest corner of the central courtyard of the Lariha House, a seven-door room and the carved wall opposite it are symmetrically balanced. Similarly, the three-door rooms on the northeast facade and the five-door room positioned between them also exhibit spatial symmetry. The entry and exit to the rooms are not directly through the door-windows; instead, they are typically accessed via side corridors placed along the shorter sides of the room (Figure 7). This arrangement ensures that, especially during crowded gatherings, male and female guests access the room through separate entrances, creating a spatial layout that respects privacy. Additionally, these rooms traditionally feature slightly elevated *Shah-Neshin* areas for elderly individuals.



Figure 7. The plan, interior, and exterior views of the three-door and five-door rooms of Lariha House.

In a specific room called *Orosi*, there is a large central rectangular space surrounded by four smaller rectangular areas. These sections can be used together or separately according to the needs. This layout offers multifunctional usage options that cater to different numbers of users and allows for the merging or separation of spaces.

The design of the rooms is based on the golden ratio, with a focus on human scale. This proportion ensures controlled daylight entry into the interior, and the door and ceiling heights are also determined accordingly. When a higher ceiling is required for technical reasons, the height is balanced with a wooden suspended ceiling or an arched vault (*Karbandi*).

4.2.4. Talar, Eyvan

In addition to open spaces such as courtyards and enclosed spaces like rooms, semi-open spaces are also important and characteristic spatial components. In different climatic regions, semi-open spaces in houses vary in depth, height, and location, and are used seasonally for heating or cooling purposes. Semi-open spaces can serve specific functions, such as the Talar, which is an independent and larger area, or transitional spaces, such as the Eyvan, which connects open spaces to enclosed ones.

The Talar, with its high ceiling, depth, and semi-open structure, provides the advantage of natural ventilation as it does not directly receive sunlight under these climatic conditions. Positioned on the south

facade of the courtyard, along the central axis, and opposite the winter rooms, this space has an open, rectangular plan facing the courtyard. The Talar unit is situated approximately one meter above ground. Due to its location and design, it creates a shaded and cool area (Figure 8).



Figure 8. Talar section of the Lariha House.

The Eyvan, which is semi-open with three sides enclosed by walls and an open facade facing the courtyard, also maintains a strong spatial relationship with the courtyard, much like the Talar. It has become an important component both functionally and visually.

4.2.5. Basement (Sardab)

The main basement of the house (*Sardab*) is approximately 6 meters deep and is located towards Eyvan and the wind tower, accessible via 38 steps (Figure 9). Its ceiling is constructed in the form of a vault (*Tagh Tavize*) using plaster and reeds. This section, used as a cool living space during the summer months, is effectively ventilated through natural airflow provided by the windcatcher (*Badgir*) placed above it. Due to the higher placement of the upper units, it also receives daylight. Additionally, it functions as a water reservoir, supporting the thermal comfort of the building's interior. A second basement, serving as the *Baharkhane*, is located on the west facade of the house. The basements and storage areas of the house are connected by stairs leading up to the courtyard level, meaning these spaces are not independent or separate, but rather are considered complementary parts extending from the living areas above to the underground. Another use of the *Sardab* was for the storage of food items such as meat and legumes in its small rooms.

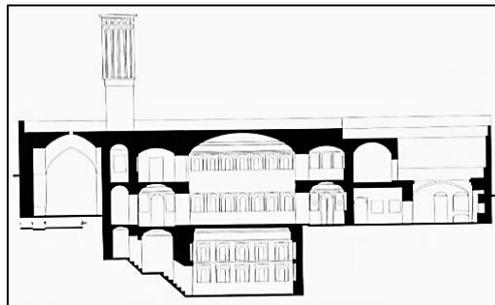


Figure 9. Section passing through the Talar and Sardab sections of the Lariha House.

4.2.6. Wind Tower

One of the most important and characteristic elements of Yazd architecture is the wind towers (*Badgir*). Some of these wind towers work solely based on the principle of natural convection (air movement due to temperature differences), while others use both convection and the cooling effect of evaporation together. In this system, the air entering the tower is humidified through a small pool and fountain placed beneath the tower, making it both cooler and more comfortable.

The main wind tower in the Lariha House is not aligned with the main axis of the courtyard but rather positioned at one corner of the Talar (Figure 10). This placement emphasizes the spatial relationship it establishes with the courtyard and Talar, enhancing its functional efficiency. In addition to the largest

wind tower, other wind towers are positioned in various sections of the house, serving the same purpose. These wind towers are in the summer section of the house, contributing to regulating the interior temperature by utilizing clean and renewable energy during the hot season.

In terms of operation, these towers take in the cool outside air and direct it to the lower living areas through internal channels, thus lowering the interior temperature. As a result, the interior temperature could be several degrees lower compared to the external temperature in the shade.

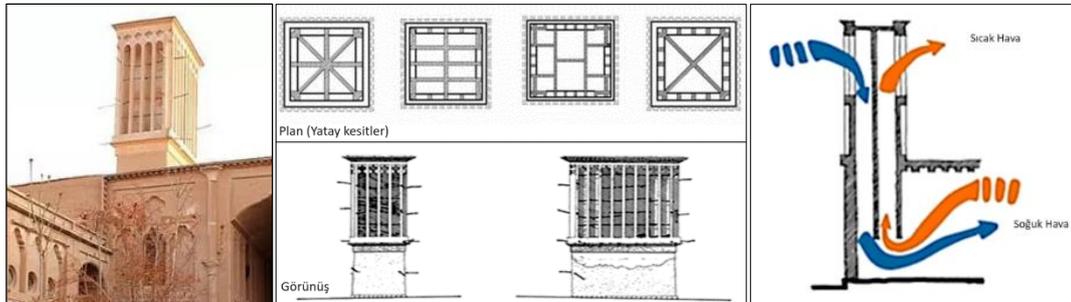


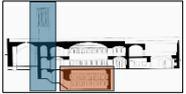
Figure 10. From left to right: The wind tower of the Lariha House, the appearance, section, and operation system of the wind towers [16].

4.3. Evaluation of the Lariha House in the Context of the Principles of Pirnia

At this point, it can be observed that the spatial components of the Lariha House are not only physical architectural elements but are also designed based on fundamental principles that shape traditional architectural thinking. The five fundamental principles outlined by Pirnia are concretely reflected in the structure through the spatial organization of the house, its climate adaptation, material selection, and the relationship with the social structure. In the table below, the spatial reflections of these principles in the context of the Lariha House are summarized, and the structure principal relationship is evaluated from a holistic perspective (Table 2).

Table 2. Evaluation of the Lariha house in the context of the principles of traditional Iranian architecture.

Iranian Traditional Architectural Principles	Spatial Reflections in Lariha House	
1. Human-Centered Design	<ul style="list-style-type: none"> Room dimensions are human-centered, with niches and ceiling heights. Multi-functional use of rooms. Entry and exit configurations are suitable for privacy. Seasonal internal migration between spaces for user comfort. 	
2. Inward-Facing Design	<ul style="list-style-type: none"> All openings directed towards the courtyard. Separation of private areas through the Enderuni–Biruni distinction. Indirect entry configuration (Haşti-Dalan) to block direct visibility. Enclosed form with high garden walls. 	
3. Self-Sufficiency	<ul style="list-style-type: none"> Use of local materials (adobe, plaster, brick, wood) in construction. Provision of natural climate control through the wind tower. Use of the Sardab for water and food storage. 	

		
4. Avoidance of Excess	<ul style="list-style-type: none"> • Functional planning and determining the size of the space according to the type of use. • Use of decorations for architectural purposes. • Storing items in wall niches. • Designing circulation areas solely based on functional needs. 	 
5. Building Knowledge and Proportions	<ul style="list-style-type: none"> • The spaces are designed based on the golden ratio and with a symmetrical layout. • Establishing climatic balance; wind towers and pools. • Structural proportions based on static calculations. 	 

4.4. Traditional and Contemporary Housing Architecture

Lariha House, in terms of spatial components, is a residence that largely embodies the characteristics of traditional buildings. However, when reflecting these features in contemporary housing architecture, it is evident that not all components are fully applied today.

In the Iranian context, contemporary architecture generally refers to the period that began after World War II, from the 1940s onward, under the influence of Western modernism and continuing to the present day [17, 18]. This process is divided into two main periods: the Modernist period (1940–1979) and the post-Islamic Revolution period (1979–present). In this study, the term “contemporary architecture” specifically refers to the second period, following the Islamic Revolution. The selected residential example was chosen from among housing projects designed in the last two decades that have been recognized or awarded in this context. Accordingly, the “Yazd Garden House” project, designed by Mehdi Gerami and awarded second place in the residential architecture category in Iran in 2014, was selected as the example [19].

In this context, a brief comparison has been made to evaluate the role of spatial elements in traditional houses and their reflection in contemporary housing architecture. Nevertheless, these types of residences continue to inspire modern design as symbolic and cultural values. Particularly in fields such as sustainable architecture, passive energy use, and culture-focused planning, they serve as guiding examples and are an inspiration for designers (Table 3).

Table 3. Comparison of spatial elements in traditional and contemporary housing architecture.

Spatial Element	Role in Traditional Houses	Reflection in Contemporary Houses
Seasonal Adaptability	Usage of spaces such as summer and winter rooms based on the direction and depth of the rooms	Largely abandoned; fixed usage is preferred
Climate-Adaptive Spaces	Natural cooling through elements like Talar, basement, and badgir positioned according to the sun	Re-emerging in sustainable design, but not widespread
Spatial Organization (Enderuni-Biruni)	Spatial separation and privacy based on social status and gender of the users	Reduced due to apartment living, but partially preserved; limited to the separation of living room and lounge
Introversion (Spatial Isolation)	High walls and a central courtyard for maintaining privacy and protecting the building from the outside	The goal is maintained, but the form changes; houses with gardens are now outward-facing, with a high wall enclosing the area instead of being inward-facing

Entrance Elements (Visual Isolation)	Preventing direct visual access to the interior and blocking visual transitions	Function is preserved, though the form changes; entryways transform into halls and foyers
Central Courtyard (Hayat)	Creating microclimates, a central social space, and an open area where privacy is preserved	Reduced, but modern interpretations are being made; luxury homes use atriums and modern interior courtyards
Decorative Elements	Visual richness through plaster decorations, mirror works, stained glass, and wooden details	Changing and modernizing; traditional decorations are used in limited fashion in nostalgic and tourist-oriented projects

5. CONCLUSION AND RECOMMENDATIONS

The study of traditional architecture is of great importance, especially for architectural education and research. Recognizing the key principles, spatial components, and concepts that stand out in the architecture of each region is a valuable source for understanding the context and cultural identity from which these structures emerged. Traditional architecture not only provides physical solutions that adapt to climatic conditions but also reflects the values, lifestyles, and historical accumulation of society. Therefore, there is much to learn from this architecture to produce meaningful, sustainable, and contextually appropriate solutions for today's environmental and social issues.

In this study, the spatial organization of Lariha House has been analyzed based on the five fundamental principles identified by Pirnia, and the relationship between the building and these theoretical principles has been explored. The findings show that traditional buildings can serve as an inspiration for contemporary architecture, not only at a formal level but also at a conceptual one.

Based on this, the following recommendations for contemporary residential designs are proposed:

- In the context of spatial flexibility, providing multifunctional spaces instead of single-use rooms.
- Including courtyard-type open spaces or semi-open areas, considering their climatic and social effects in designs.
- Integrating passive climate control elements such as wind towers and basements with modern technologies to create sustainable solutions.
- Ensuring that cultural codes, such as privacy, are not ignored in contemporary designs, providing solutions that align with the user profile at both the formal and functional levels.
- For sustainable design, blending the use of local materials with contemporary materials and techniques.
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In conclusion, rather than making literal formal copies from traditional architecture, producing responses to contemporary design challenges based on meaningful interpretations of the underlying principles is an important approach for both cultural continuity and architectural identity.

Conducting similar studies in different countries or architectural types will guide in creating creative solutions to contemporary issues based on local context, building a meaningful bridge between the past and the future. Guiding contemporary architectural problems with historical knowledge not only helps in understanding the past but also responsibly constructing the future.

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