

**Position of Entrance in the Architecture of Vernacular Buildings of Bandar Lengeh  
Hamed Mohammadi Mazraeh <sup>1</sup>**

**Received: 03- February-2020**

**Accepted: 01-June -2021**

**DOI: 10.22034/(JRUPA-EI).2021.283161.1074**

**ABSTRACT**

What can be understood from Iranian architecture are elements, spaces and structures of native architecture that have been built and polished by the understanding of ancient architects in the building, and since the entrance of a building connects the interior and exterior space, in order to study this issue qualitatively with Recognition of elements (holes, elements, feminine and masculine percussion and entrance), architectural spaces (front porch, entrance hall and eunuch or old man) and native architectural structures (wall color, proportions and spatial connections of the entrance in native buildings) Quantitatively, in order to prove the stability and functionality of the building entrance, light and velocity of absorption wind flow is analyzed among the native buildings in Shahid Beheshti Street, which is a collection of 168 traditional buildings dating back more than 70 years. One of the most accurate measuring devices to evaluate data such as metering and speedometer wind absorption wind flow in July, which is the peak month of heat in Bandar Lengeh area, the result is based on the study of variables on the entrance space of the building It expresses the environment, which has been able to benefit Ray of sustainable factors by recognizing the elements, spaces and structures in indigenous architecture to achieve conditions of architecture in which special attention is paid to the factor of comfort and privacy in the hot and humid climate of Bandar Lengeh

**KEYWORDS:** Input, Stability, elements, Spaces structure, port.

**Reference to article:**

***Hamed Mohammadi Mazraeh (2021), Position of Entrance in the Architecture of Vernacular Buildings of Bandar Lengeh). Journal of Research In Urban Planning and Architecture - Environment Identity (JRUPA-EI) NO.2 (6), Spring 2021.P.23-42.***

**[http://www.ei-journal.ir/article\\_135489.html?lang=en](http://www.ei-journal.ir/article_135489.html?lang=en)**

<sup>1</sup> Msc, architecture, Department of Architecture and building Engineering, Faculty of korani, bandarabbas Branch, Technical and Vocational University (TVU), Hormozgan, Iran Email: [HMM.MOHAMMADI@GMAIL.COM](mailto:HMM.MOHAMMADI@GMAIL.COM) (Author)

## 1. INTRODUCTION

Vernacular buildings are the product of architectural thinking that has emerged as a response to the needs of pre-industrial societies and to the impenetrable constraints of a climatic zone and have been collected because of the unique interaction between the human mind and experience by observing the natural phenomena (N.Engin, 2007). In other words, vernacular buildings in all areas are the result of centuries of thinking and practice of experience and the principle of inspiration as a continuous source of knowledge (Barzegar And Mofidi, 2010). Today, people live in houses where neglect of human beings and their needs in design and construction, has reduced sense of belonging and peace (Shams 2010, 92). In the vernacular culture of Iran, the house must have an inner and outer privacy so that the inner space is a safe and comfortable environment for the users of its buildings (Toofan 127, 2010). This is the input element that connects the indoor and outdoor spaces in order to maintain privacy. The entrance of vernacular houses has almost single components and compositions such as arches, platforms, gates, and doors along with components such as liminals, knockers, catch, Golmikh, opening, entrance, porch and corridors. These components provide stopping, waiting, and entering and the guided the visitors according to gender (female or male), quality of presence (presence at night or day, while resting or working time, alone or together, in winter or summer, Next to nature or far from it) and social relationship (individual or collective, personal or social relationship, short-term or long-term) to different spaces of the house (Hashemi, 1996, 2). This issue is qualitatively studied by recognizing architectural elements (openings, elements, female and male door knockers, and entrance), architectural spaces (front hall, entrance hall and eunuch residence), and local architectural structures (The color of the walls, proportions and spatial connections of the entrance in the native buildings) among all vernacular buildings. To prove the stability and check whether the entrance of the building is functional or not, the light and wind speed are measured quantitatively among vernacular buildings (by selecting a model with the most use for quantitative analysis) in Shahid Beheshti Street including 168 over 70 year old vernacular buildings in Bandar Lengeh after the qualitative analysis.

### BACKGROUND

A study of the research background on the concept and nature of the entrance space from the point of view of Pirnia includes 5 principles of popularity, self-sufficiency, helplessness, avoiding futility, and introversion (Pirnia, 2004) that Iranian architecture with any user must comply with. Many studies have been done on the entrance In terms of quality (Table 1), in areas other than Bandar Lengeh, but, no serious study has been done so far in terms of quantitative analysis of the entrance space.

**Table 1:** Different theories on entrance

Authors	Results
Molanaei and Soleimani 2013	Investigating the entrance space in mountainous areas and the connections between the entrance and other spaces in terms of privacy and space communication
Ali Hesabi, Al- Ghorbani 2014	the study of the types of entrance space and the major dimensions of the implementation of the structure of the entrance and the role of the entrance spaces in the main passage in

		visibility control
Daneshmand and Noghrekar	2013	how to design the entrance according to the principles of forming the liminal architecture and expanding the quality of life
Chelongarian, Askari, Wasifian and Kolahdoozan	2015	A study of different types of spaces related to the entrance space among vernacular houses in Isfahan
Sekhvatdoost and Alborzi	2018	Investigation of cultural relations of the entrance space, types of knocker widely used between the entrances of Qajar period houses in Qazvin from the point of view of Ferdinand de Saussure, Charles Sanders Pierce and Umberto Eco
Toofan	2010	The study of the relationship between privacy and entrance spaces in Iranian architecture, including the study of spaces, the study of the body and elements and the process of formation of the entrance space
Yadollahi and Adibian	2019	Studying the hierarchy of entry including the components of the entrance of mosques physically and semantically among Iranian mosques
Irani, Armstrong and Rastegar	2017	the types of structures of the entrance space between the urban contexts of Iran and its components
Maisami and Shamshiri	2018	Investigating the connections that the entrance space establishes with other spaces
Sohrabi and Mollayousef	2015	following the expression of the entrance space between different periods of architecture
Kaykhosravi and farshchian	2017	introducing the forms of entrance spaces in the architecture of Sanandaj vernacular houses, it seeks to introduce special types of entrance
Mohammadi Mazraeh and Pazhouhanfar	2017	By introducing several examples of entrance spaces among the vernacular textures of Qeshm Island, it seeks to express any kind of use in the entrance space

Source: *the writer*

### Research method

This research evaluated living space scenery from the users' point of view in using the entrance space (Arthur, 1977, Zube, 1982) using a combination of quantitative and qualitative solutions (Groat & Wang, 2010), including field and library studies. Since Bandar Lengeh is located in an area with a hot and humid climate and the humidity and heat, especially in summer is beyond the tolerance of users of vernacular buildings, the architects and users in

the past followed logical and practical principles for the well-being of users. This issue is qualitatively studied by recognizing architectural elements (openings, elements, female and male door knockers, and entrance), architectural spaces (front hall, entrance hall and eunuch or old residence), and local architectural structures (The color of the walls, proportions and spatial connections of the entrance in the native buildings) in Shahid Beheshti Street including 168 over 70 year old vernacular buildings in Bandar Lengeh after the qualitative analysis. The metering and accelerometer devices were used to measure the functionality of the entrances quantitatively (Figure 1).

**Study area with its climate**

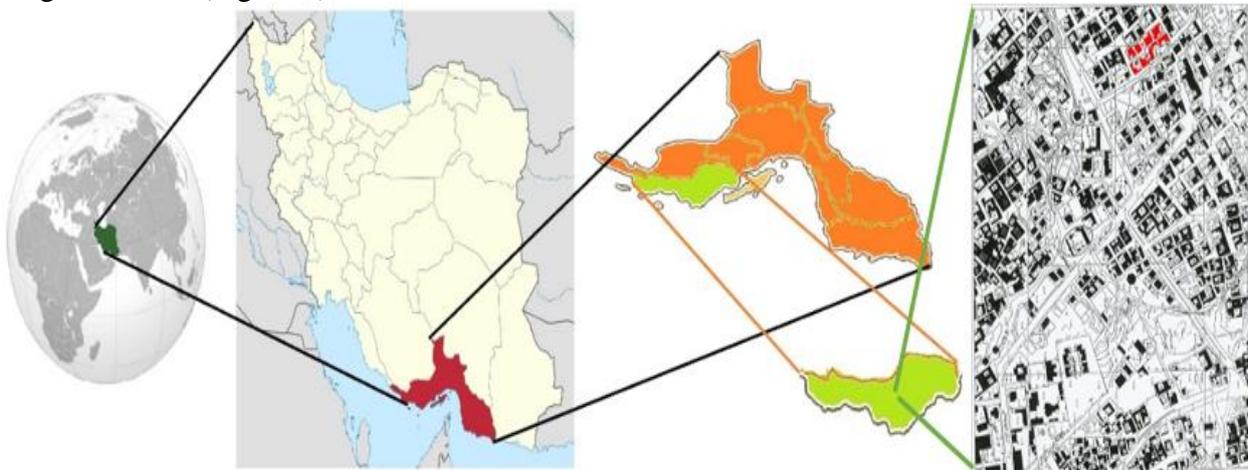
Climateism is a fundamental view in the design of Iranian vernacular houses (Memarian, 2007) and these are vernacular houses that have a significant relationship with the local climatic components (Tahbaz, 2008). Architecture on the shores of the Persian Gulf is known for its warm, humid or tropical climate, and the same climate solutions have been proposed for architecture in all these areas. Numerous studies have shown that they are not efficient in observing details (Nikghadam, 2012). The climate of this region requires users and architects to understand the wind direction and the expansion of windows and shutters in that direction (hyde, 2000; salmon, 1999; Mahmoodinejhad, 200). To take advantage of factors such as elements, spaces and structure of vernacular architecture specified in Table 2 are required to express the entrance space.

**Table 2:** Criteria for measuring the entrance space

Criteria	Index	Characteristic	
Analysis	Elements	Openings	To view the outside space and light
		Elements	Beauty part of the building
		Female and male knocker	Gender determination
	Spaces	Entrance	Beauty part of the building
		Fronts	Beauty part of the building
		Entrance hall	Privacy-public interface
	Structure	Eunuch residence	Living space sometimes
		The color of the walls	-Beautiful part of the building
		Proportions and spatial connections of input in native buildings	- Coloring the building with the environment to reduce heat
		Light and temperature	Measurement of light and temperature to determine the spatial value of being functional or not

Source: *the writer*

Bandar Lengeh city is located at 54°30'E26°18"N at an altitude of 14 meters above sea level. It is in the macro-tropical climate and in the tropical and arid region in terms of the middle climate and according to the climatic studies of the Gioni building in Bandar Lengeh, it shows that in April afternoons and in May, day and night, comfort conditions can be created by using natural ventilation systems. In terms of temperature, the air temperature is above 37 degrees Celsius from the first half of July to the second half of September. From the second half of September to the first half of January, the weather is favorable and from the second half of January to the second half of March, heating systems are required. Also, the average relative humidity in Bandar Lengeh region is between 60 to 75%, so that the maximum time when the heat intensity can be felt is between the first half of July to the second half of September. The local wind calendar of this city shows that it February to October at 6:30 to 15:30, from the east and southeast and in all months of the year and from 15:30 to 21:30, the wind blows from the south and southwest as a gentle breeze. The night winds are scattered and with relatively low intensity in March, April and summer months. the historical context of Bandar Lengeh dates back to the Qajar period (1304-1174) and the culmination of architecture can be seen in the heart of Bandar Lengeh, near Shahid Beheshti Street, and this study is conducted by choosing this neighborhood, which has historical precedence over other neighborhoods (Figure 1).



**Figure 1:** Geographical location of Bandar Lengeh in the map of Iran and the world

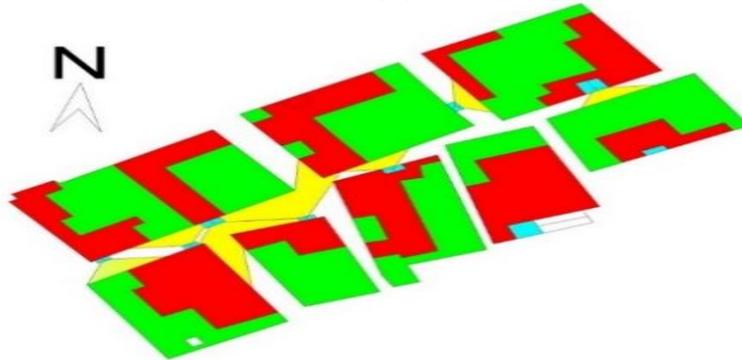
*Source: the writer*

### Privacy

The term privacy was first used in research in 1890. Harvard Law Firm published an article by Samuel Warren and Lewis Brandis entitled "The Right to Enjoy Privacy" (Ansari, 2007: 64), which expresses the privacy of the realm of a person's life that that person typically and customarily or with prior announcement expects others to not have access to information about that realm without his consent "(Ansari Baqer, 2007, 34). Privacy is often defined as the right to be alone, restricted access to oneself and the ability to prevent unwanted access to human beings, confidentiality and concealment of certain things from others, protection of personality and dignity, control over personal information, intimacy and Proximity and ... (Ansari, 2004, 66-1)

Privacy is a cultural phenomenon whose form and content depend on social customs and practices (Aries, 1987). In the present age, human beings cannot live separately from society;

therefore, they need to be present in society to meet their needs. Thus, human beings need factors such as food and shelter and social communication to meet their needs (Moore, 2003). Legally, privacy is one of the objective rights to material property or objects and it is considered to be a kind of right of the objects (Safayi, 2003: 1). This territory can be divided into 3 types in terms of privacy: the first type (completely private spaces in green), the second type (spaces Semi-private, including: red central courtyard) and type 3 (spaces between private and semi-private, including the use of architectural elements and spaces that affect the preservation of privacy, such as corridors and entrances that have a direct view of the central courtyard Reduces or cuts that can be divided by yellow) (Figure 3).



**Figure 2:** Keeping the entrance privacy by using architectural principles

*Source: the writer*

### **Input**

The entrance space is considered as a joint between the inside of the building and the public arena, which distinguishes the place of changing the direction of movement to enter a building and also the place of stopping and waiting in front of the building from the passage space (Sultanzadeh, 1994, 170). In the vernacular houses' architecture the entrance doors of the houses were often very small (Figure A of 3), and it is not surprising that a stranger walks into a vernacular area of Iran for the first time and loses his way, because there is no view." (Nari Qomi, 2010, 75). The entrance space has a long history in the historical context of Bandar Lengeh and in other respects the entrance was the last component of the building in the old context of Bandar Lengeh. This issue is qualitatively studied by recognizing architectural elements (openings, elements, female and male door knockers, and entrance), architectural spaces (front hall, entrance hall and eunuch residence), and local architectural structures (The color of the walls, proportions and spatial connections of the entrance in the native buildings) among all vernacular buildings (Figure 3B).



**Figure 3:** An example of the entrance space in the old texture of Bandar Lengeh  
 Source: the writer

## Architectural elements

### Openings

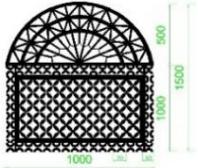
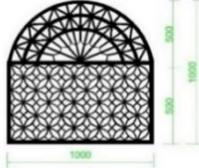
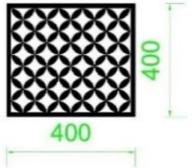
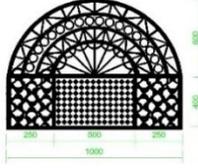
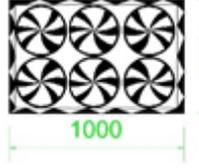
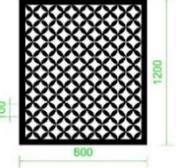
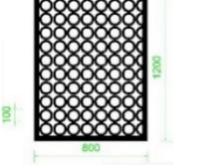
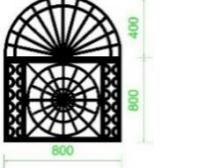
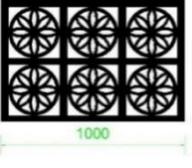
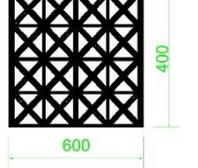
The first place of manifestation of Iranian-Islamic art was the architecture of mosques, after which houses have taken the second place (Bemanian, Ali Nasab, 1343-543). Since the lighting systems of traditional architecture of Iranian houses have been very diverse and one of the solutions used has been the use of various types of shutters such as: sash, three doors, five doors with colored glass and skylights and openings (Tahbaz & Moosavi, 2009). Openings were small enclosures that besides lighting, they provided ventilation, and in fact, the opening could be seen as small windows, usually above the door and sometimes on either side to provide light and for complex spaces of entrance corridors or entrance corridors (Nemat Gorgani, 2002). The entrances are described as spaces that are transformed into spaces with the function of passing from one place to another, and in addition to marking the space of two different spaces, they were a factor for changing vision, adapting to climatic conditions, changing behavior and rhythm (Nilforooshan, 2002). In the vernacular architecture of Bandar Lengeh, the main purpose of the implementation of openings is not only ventilation to the interior space, but also light control by using opening openings in the wall of the building and above the door to break light. Thus the presence of such openings in abundance in Bandar Lengeh shows that in the end, all functions have been for the well-being of building users (Nematgorgani, 2002). Openings were used in the door of the native buildings of Bandar Lengeh with 2 applications of light refraction and limited absorption of light to the entrance hall space and ventilation of the hallway space (Figure 4). This element of

sustainable architecture above the entrance door is presented in 12 different models in Table 1, which consists of beautiful and functional geometries.



**Figure 4:** Using the opening element in the entrance hall of the building  
 Source: the writer

**Table 3:** Types of openings used on the top of the entrance door in the urban context

Dimensions	Row	Dimensions	Row	Dimensions	Row
	9		5		1
	10		6		2
	11		7		3
	12		8		4

Source: the writer

**Table 4:** The frequency of each opening in the entrance of vernacular buildings

Row	types of elements	Percentage of its use in entrance spaces (%)	Row	types of elements	Percentage of its use in entrance spaces (%)
1	MODEL 1	11	7	MODEL 7	3
2	MODEL 2	8	8	MODEL 8	11
3	MODEL 3	4	9	MODEL 9	12
4	MODEL 4	2	10	MODEL 10	7
5	MODEL 5	5	11	MODEL 11	10
6	MODEL 6	9	12	MODEL 12	18

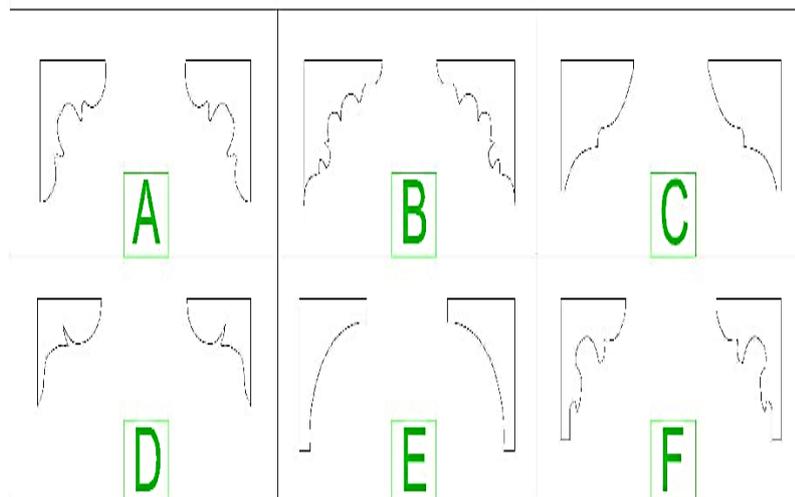
Source: the writer

Row of types of elements Percentage of its use in entrance spaces (%)

**Elements**

Recent studies show that people's aesthetic preferences are related to their personal emotions and mental background of the place (Kaplan et al. 1991) and according to field studies conducted at the entrance of Bandar Lengeh vernacular buildings, 6 elements have been achieved in Figure 5. It was practically used at the entrance of the building, so that these elements can be considered as part of the entrance decorations.

**Figure 5:** The most common type of elements used in the entrance walls of vernacular houses in Bandar Lengeh



Source: the writer

**Table 5:** The rate of use of each type of element at the entrance of vernacular buildings

Row	Percentage of its use in entrance spaces (%)	types of elements	Row	Percentage of its use in entrance spaces (%)	types of elements
1	Type A	19	4	Type D	7
2	Type B	12	5	Type E	37
3	Type C	9	6	Type F	16

Source: the writer

Also, according to the results, among the 168 types of studied inputs, the most elements used in Lengeh buildings are: Type E, Type A, Type F, Type B, Type C and Type D with 37, 19, 16, 12, 9, and 7%. As type E is also one of the easiest elements in construction that can be seen in new buildings (Table 3).

### Male and female knockers

Vernacular architecture creates privacy, hijab, and privacy for the residents of the building by covering the view and creating privacy in the house, and by separating the outside and inside, as well as the deviation of the view at the entrance and the type of entrance from the corridor to the house and the different sounds of knocker (Mahmoudi and Nikmoghadam, 2007). Creates and getting permission to enter the house by taking the name of God or saying Ya Allah, and ... (such as ringing and knocking on the door), is for the homeowner to understand the visitors' gender (Tabatabai, 1417).



**Figure 6:** Male and female knockers

Source: the writer

### Men's and women's knocker

#### Entrance

The entrance of vernacular houses is a connection-transfer space that connects the passage to the inside of the building and also the wall of the building encloses both sides of the entrance door so that the waiting person can get away from the main traffic flow inside the alley (Haeri, 1388). These entrances have special forms that beautify the entrance walls. The most obvious forms of entrances can be seen in 8 different states in the image below in the old texture of Bandar Lengeh (Figure 7).

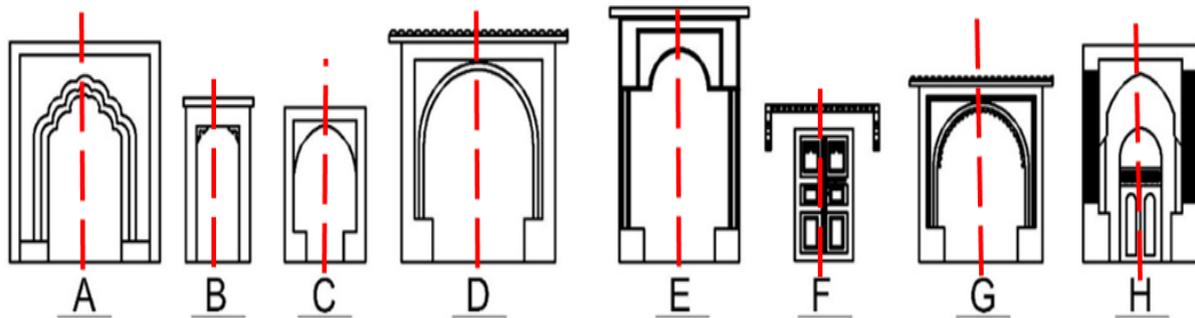


Figure 7: View of the examples of the entrance gate in the old texture of Lengeh

Source: the writer

Table 6: The rate of use of each type of element at the entrance of vernacular buildings

Row	types of elements	Percentage of its use in entrance spaces (%)	Row	Percentage of its use in entrance spaces (%)	types of elements
1	Type A	8	5	Type E	7
2	Type B	5	6	Type F	18
3	Type C	19	7	Type G	13
4	Type D	24	8	Type H	6

Source: the writer

According to field studies, the highest frequency of entrance gates among these 8 different modes used in the form of entrance gate are: type D, type C, type F, type G, type A, type E, type H and type B with 24, 19, 18, 13, 8, 7, 6 and 5% (Table 4).

### Architectural spaces

#### Fronts

"Jalukhan" is Persian is a word that is composed of a combination of two words "Jalou" meaning "forward, facing" and "Khan" in literature meaning "house" (Amid, 1963-438-378). Also, Moin dictionary defines it with different meanings such as "front of the house, the field that is located in front of the mansion and house" (Moin, 1238, 1360) and although the front houses are an important component of the vernacular spaces of Bandar Lengeh, its usage is neglected.

#### Entrance hall

The entrance is considered as the space located at the border between the outer and inner areas and also the link between the inner and outer space, which part of the entrance space of the house and the inner space at the same time. It is the part of the public arena that responds to behaviors in urban and rural areas (Mehdipour, Jafari, and Saadati, 2013). Entrance spaces can be seen in the vernacular texture of Bandar Lengeh in 3 different forms (direct, indirect and winding), so that their walls are mainly composed of openings for ventilation and light absorption (Figure 8).

**Figure 8:** The direct entrance corridor of Marzooqi building (right), the indirect entrance corridor of Farooq building (middle) and the tortuous entrance corridor of Mohammad building in the old texture of Lengeh (left)

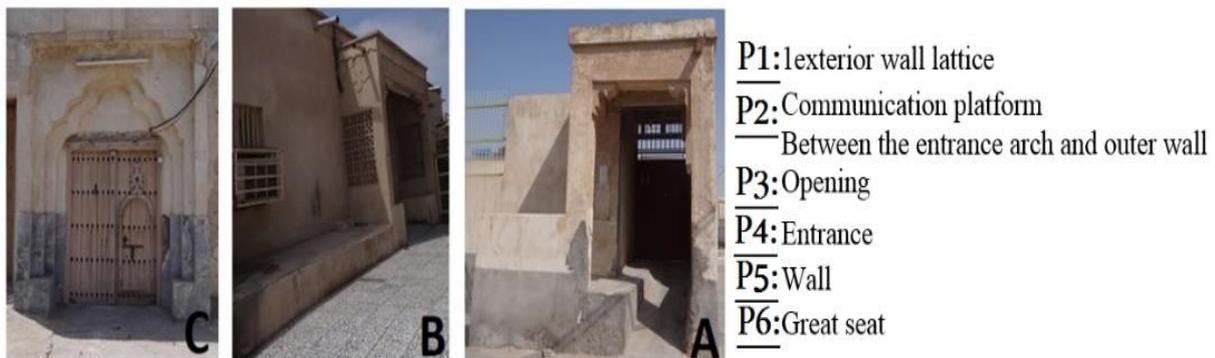


Source: the writer

**Eunuch residence**

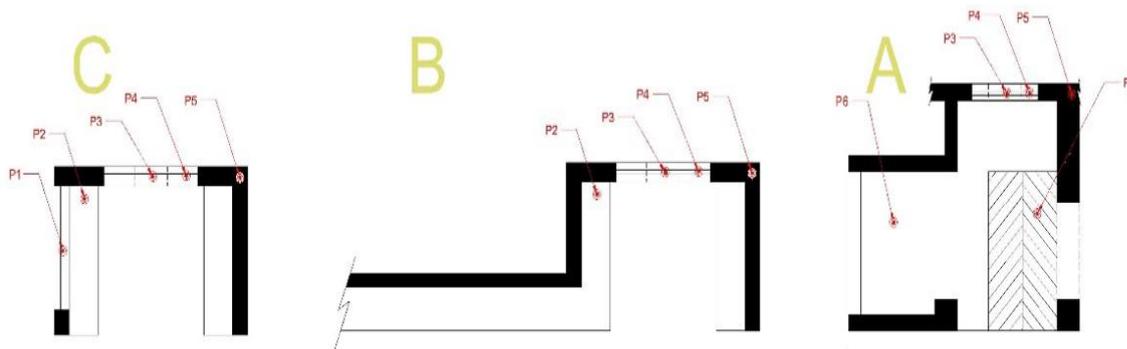
Collective spaces are part of the urban components that enable citizens to engage in social interactions in such spaces (Gulick, 1998: 135-141). One of these collective spaces is the entrances of buildings, where users apply the eunuch residence as a space for social interactions. In addition, the platforms around the porch or corridor had the same function, which is not used in new buildings.

In addition, near the corridors, some entrance spaces were used with platforms that had more or less the functions of an entrance arch platform. Most of the platforms, especially the platforms of large and important spaces, were made of masonry and mortar, and bricks were used only in some houses. Also, many elderly people sat on such platforms to spend part of their leisure time. Conversations were held (Toofan, 2010, 136), so that the main spaces of eunuch residence in the old texture of Bandar Lengeh can be described in Figures 9 and 10. Such residences were built in 3 executive styles in the old texture of Bandar Lengeh, Model A can be used as a space with the most use for users in the early afternoon to late night, model B by connecting the platform between the entrance vault space to the end of the outer wall to deal with moisture entering the inner wall and as a seat, and model C is also one of the main types of entrance spaces that have been used in the historical context of Bandar Lengeh.



**Figure 9:** Different ways of implementing eunuch residence in the building

Source: the writer



**Figure 10:** Different ways of executing the eunuch in the plan

Source: the writer

**Table 7:** Different styles of performing eunuch residence as a plan in the old texture of Bandar Lengeh

Row	element type	Percentage of use in entrance spaces (%)	Row	element type	Percentage of use in entrance spaces (%)	Row	element type	Percentage of use in entrance spaces (%)
1	A	13	2	B	18	3	C	69

Source: the writer

Among the examined entrances (168 buildings), the results indicated that 13% of the style of execution of eunuch residence in the entrance spaces is related to type (A), 18% related to type (B) and 69% related to Type (C) which was used for ease of execution of the platform.

### Architectural structure

#### The color of the walls

Bentley et al, by studying the collection of residential buildings and houses in England, have pointed out the existence of a tendency in the color of belonging and environmental differentiation in buildings, and interpreted it as a sense of environmental readability. He called this sense of space as differentiation and separation and introduces it as one of the main features of the formation of sustainable human spaces (Javan Forouzandeh, Motalebi, 1390, 31). The colors used were mostly between white and cream, pea to burnt brown and pale green to full color, and the reason for using colors that match the color of the soil was the proximity to the elements of nature in the area so that the color spectra used in the entrance space and the door of the building can be divided as described in the table below (Table 8).

**Table 8:** Colors used on the doors of buildings and walls

ردیف	رنگ	کد رنگ در مدل	نام رنگ	ردیف	رنگ	کد رنگ در مدل	نام رنگ	ردیف
	دانه ها	RGB			دانه ها	RGB		
A		AD FF F2	مغز پسته ای	۱۷	A,B	FF F8 DC	کاهی	۱
A		C7 FC ۰۰	مغز پسته ای پررنگ	۱۸	A	FF EB CD	کاهگلی	۲
A		۸۰ ۸۰ ۰۰	زیتونی	۱۹	A	FF E4 C4	کرم	۳
A,B		FF DA B9	هلویی پررنگ	۲۰	A,B	FF DE AD	کرم سپری	۴
A,B		EE E8 AA	نخودی	۲۱	A	F5 DE BC	گندمی	۵
A,B		E0 E6 83	خاکی کم رنگ	۲۲	A,B	DE BB ۸۷	خاکی	۶
A		FF FF ۰۰	زرد	۲۳	A	F0 FF F0	پشمی محو	۷
A,B		FF D7 ۰۰	کهربایی باز	۲۴	A,B	FF FF E0	شبری	۸
A,B		BD B7 B6	مالی	۲۵	A,B	FF FA CD	شبرشکری	۹
A,B		F5 F5 F5	خاکستری محو	۲۶	A,B	FA FA D2	لیسویی	۱۰
A		FF F5 EE	بژ باز	۲۷	A,B	FF E4 B5	هلویی	۱۱
A		F5 F5 DC	هلی	۲۸	A	۸۰ ۸۰ ۸۰	خاکستری	۱۲
A,B		FF FF F0	استخوانی	۲۹	A	۶۹ ۶۹ ۶۹	دودی	۱۳
A,B		FA FB D7	بژ تیره	۳۰	A	۷۷ ۸۸ ۹۹	سربی	۱۴
A		FA F0 E6	کتانی	۳۱	A	۷۰ ۸۰ ۹۰	سربی تیره	۱۵
A		FF F0 F5	صورتی مات	۳۲	A	F2 F4 F4	لجنی تیره	۱۶

توضیحات: نوع بهره گیری شده رنگ بر روی درب ها(A), دیواره بنا(B)

Source: the writer

### Proportions

According to Plato, symmetry and proportions themselves are not beautiful and are born of beauty, and all beautiful things are beautiful only because they are productive (Ahmadi, 2004). Aconias offers more specific criteria of beauty and says that beauty requires research on "Proportion or harmony" (Shelley, 1385, 34) and since the presence of symmetry can be seen from the first mosques and historical monuments of Iran, symmetry was the principle in the architectural structure of Iran seen at the entrance of Bandar Lengeh buildings in Figure 8.

### Input spatial communications in vernacular buildings

The connections that the entrance space establishes with the interior of the building are in 3 forms, including the entrance space with stairs (right), the entrance space with porch and stairs, and the entrance space with corridors and stairs. This staircase is a connection between the central courtyard and the entrance, which connects the house and the roof to the attic (Barbar) room (a rectangular room on the top floor of a house with a lot of open windows) (Figure 11).

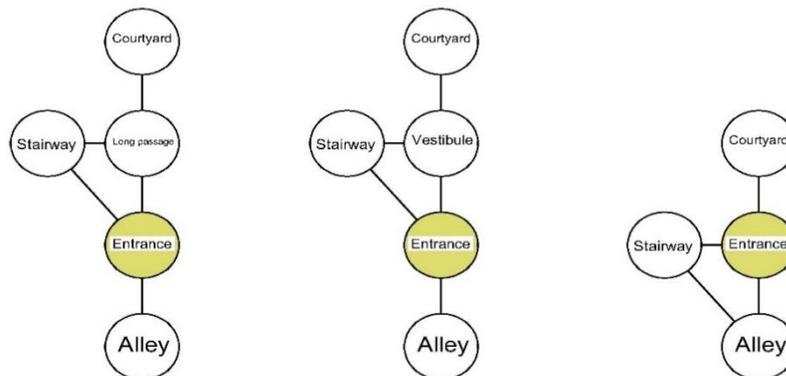


Figure 11: Input spatial connections with other spaces(Source: the writer)

## Wind and light flow velocity analysis

### Measuring device

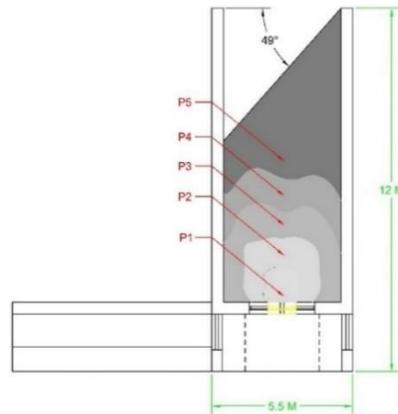
In order to take measurements of wind speed conditions and light intensity in each of the vernacular spaces, each component has been analyzed using special devices, so that the multifunction wind speedometer and flowmeter model DAF3009 model by General tools can measure the parameters of wind speed, flow or volume of air flow, evaporation enthalpy, ambient temperature, dew point, bubble temperature and ambient humidity in ft<sup>3</sup>/min and m<sup>3</sup>/min. The DAF3009 anemometer measures and displays minimum, maximum and average air velocity and airflow volume. In this multifunction, the enthalpy or amount of heat required for liquid evaporation is displayed in Btu / lb and kJ / kg. Multifunction DAF3009 measures the ambient temperature, dew point temperature (DP), wet bubble temperature (WB), wind temperature (WCI) and relative humidity (RH). To capture light information and the effects of light on the entrance spaces, the CEM / DT-856A device is used to study the amount of light absorption in the entrance spaces. This device is used for the necessary equipment for industrial environments such as: greenhouses, poultry farms, industrial sheds, etc., and its measuring range is lux meters and by its separate sensor in several different measurement ranges, the maximum range of which is up to 400,000 LUX (Figure 12).



**Figure 12:** Using devices for measuring light intensity and wind speed (Source: *the writer*)

### Opening exposure function in the entrance space

The light intensity has been analyzed (Figure 13) to analyze the functionality or non-functionality of the interior space of the corridors. Figure 13 and Table 6 indicate that the basis of direct sunlight calculations is equal to 48347 at nine o'clock in the morning and 54746 at 15 o'clock in the afternoon. Using factors such as elongated corridors and openings, the average light intensity at 28:00 in the morning is equal to 2868 and at 15:00 in the afternoon is equal to 3577. These corridors are stretched and with the openings used in the entrance space. It was able to create comfort between the entrance space of the corridor by breaking the light and providing suitable light to the corridor space.



**Figure 13:** Analytical points of light intensity in the entrance space(Source: *the writer*)

By getting closer to the entrance, the light enters the entrance space from the opening, which can be said that this light causes the person who is reaching the entrance to slowly face the light to the opening which prevents a person to spend several seconds to gain an understanding of their surroundings. Also, with other important functions such as: maintaining privacy, establishing a distance between spaces, and giving family members the opportunity to get ready to accept the visitor in the central courtyard, the space has been stabilized for the well-being of the building users.

**Table 9:** The intensity of light at the entrance with the presence of spaces and architectural elements (stretched corridors and openings)

Point	Light intensity (9 am) in LUX	Light intensity (3 pm) in LUX
P1	4567	5491
P2	4284	5034
P3	2773	3017
P4	1868	2419
P5	847	1926
Average	2868	3577
The amount of direct sunlight	48347	54746

*Source: the writer*

### Wind speed of the entrance

Natural ventilation acted as an active cooling strategy in the building to provide significant benefits such as natural cooling inside the building (Khan, 2008a: 1586-1604). The elements that affect the performance of natural ventilation in the vernacular architecture of Bandar Lengeh include windbreaks and openings, which can be called an Arabic example of it called Mashrabiya, which consists of perforated windows that have a natural ventilation function while providing little light to the interior space (Kenzari, 2003). The wind speed was reviewed by selecting 5 points between the entrance corridors (Figure 14). Accordingly the

wind speed in the open air was equal to 2.7 meters per second at 9 and 15 o'clock. However, according to the perceptions made in the corridor space, the wind speed was 9.28 m / s at 9 am and 2.93 m / s at 3 pm, which is another indication of the functional corridor space in the vernacular architecture. It is noteworthy that the more we go to the opening, the more we feel the speed of the wind flow, so that it can be said that the opening is another factor that strengthens the space of the corridor (Table 10).

**Figure 14:** Analytical points of wind speed in the inlet space

**Table 10:** Wind speed at the entrance with the presence of spaces and architectural elements (elongated corridors and openings)

Point	Wind speed (9 am) in LUX	Wind speed (3 pm) in LUX
P1	3.71	3.48
P2	3.45	3.14
P3	3.19	3.03
P4	3.11	2.84
P5	2.94	2.18
Average	3.28	2.93
Wind speed in the open air	2.7	2.7

Source: the writer

## Results

In terms of the amount of input use of elements, spaces and types of accesses were implemented in different ways, so that in Table 11 it is divided into 9 parts out of 168 buildings, the highest amount of use is related to buildings 117 to 151. Many of these entrances can be seen in the historical context of Bandar Lengeh.

**Table 11:** The amount of use of elements, spaces and structures at the entrance of vernacular buildings of Bandar Lengeh.

Buildings	Structure			utilized elements							Used spaces		Access to indoor spaces		
	Hierarchy	Symmetry	Axis	Entrance			Opening	Header	cornice	Front	Corridor	Enouch	Direct	Indirect	Winding
				material	Knocker	Element									
No. 1 to 37	✓	✓	-	Wood	✓	-	✓	✓	-	✓	✓	✓	✓	-	-
No. 38 to 46	✓	✓	✓	Wood	✓	✓	✓	✓	✓	✓	-	✓	-	✓	-
No. 47 to 58	✓	-	-	Metall	-	-	-	-	-	✓	✓	-	✓	-	-
No. 59 to 78	✓	✓	✓	Wood	✓	✓	✓	-	-	✓	✓	✓	-	✓	-

No. 79 to 96	✓	✓	✓	Wood	✓	✓	-	✓	-	-	✓	-	✓	-	-	
No. 97 to 112	✓	✓	✓	Wood	✓	✓	✓	✓	✓	✓	✓	✓	✓	-	-	✓
No. 113 to 116	✓	-	-	Metal	-	-	-	✓	-	-	-	-	✓	-	-	
No. 117 to 151	✓	✓	✓	Wood	✓	✓	✓	✓	-	✓	✓	✓	✓	-	✓	-
No. 152 to 168	✓	✓	✓	Wood	✓	✓	✓	✓	✓	✓	-	✓	-	✓	-	

Source: the writer

### Conclusion

According to studies conducted in several articles, including: Molanaei, Soleimani and Toofan, it was found that the entrance of each building, in addition to stability factors, could work to maintain privacy. Kaykhosravi and farshchian found that the entrance space has a variety of forms that could be used as a factor to enhance the entrance space to create a dwelling space and beautifying the entrance. The intensity of light and wind flow indicated that integrating elements, spaces and structures at the entrance of the vernacular buildings of Bandar shows their performance. That from the point of view of light absorption and accelerometer of absorption wind, we can say that in the corridors, due to elongation, the farther we go, the less light and lower wind flow exist. However, embedding opening on top of the door of this building has solved this problem and has also caused the absorption of suitable light to the corridor space. Also, with the opening installed in the opening of the hole, it causes the refraction of annoying light and the absorption of wind into the inner space of the corridors, and in terms of direct, indirect or spiral corridors, the users feel safe in the courtyards due to privacy. In terms of social relations, spaces like eunuch residence have established better social relations between neighbors due to having platforms. Also, the use of aesthetic elements in the building along with the colors used on the doors of the building and the elements have made the entrance environment doubly beautiful, so that the users of vernacular buildings and architects in the past were able to respond appropriately in creating the entrance that preserves privacy. It is hoped that this research will help the architects and users of the building to maintain the entrance environment and to develop and expand the entrance with the current architecture.

Solutions:

- ✓ It is necessary to know the types of elements, spaces and structures in each region of the country
- ✓ Expanding architecture towards the entrance in the vernacular architecture
- ✓ Preservation and expansion of this lasting heritage
- ✓ Further introduction by engineers, architects and local people

## REFERENCES

- 1- Ansari, Baqer. (2004), "Privacy and its protection in Islamic, comparative and Iranian law", Journal of Law, Faculty of Law and Political Science, University of Tehran, No. 66, Winter 2004.
- 2- Ansari, Baqer. (2007), "Privacy Rights", Tehran, Samat Publications
- 3- Barzegar, Zahra and Seyed Majid Mofidi Shemirani; (2010), "How to use the land mass in the vernacular architecture of the world", Bagh Nazar Magazine, No. 15, Tehran, 13-26
- 4- Bemanian, Mohammad Reza and Ali Nasab, Mohammad Ali (2011), "Study of the role of light in explaining the sequence of space in Islamic architecture (case study: Sheikh Lotfollah Mosque", Journal of Islamic Architecture and Urban Planning.
- 5- Chelongarian, Ramin, Askari, Nezam, Wasifian, Farkhondeh and Kolahdoozan, Neda (2015) New in Civil Engineering, Architecture and Urban Planning, pp. 16-29.
- 6- Haeri Mazandarani, Mohammad Reza, 2009, House of Nature Culture "Study of the architecture of historical and contemporary houses in order to develop the process of house design criteria", Urban Planning and Architecture Study and Research Center.
- 7- Daneshmand, Sara and Noghrekar, Abdolhamid (2013), How to design the entrance of a building according to the principles of formation of Astanegi architecture ", Quarterly Journal of Islamic Iranian City Studies, pp. 79-89.
- 8- Sultanzadeh, Hossein. 1993 "Urban Spaces in the Historical Textures of Iran". Tehran: Cultural Research Office in collaboration with Tehran Municipality
- 9- Sakhvatdoost, Noushin and Alborzi, Fariba (2018), "Reflections on the semiotics of the entrance spaces of Qajar houses in Qazvin from the perspective of Ferdinand de Saussure, Charles Sanders Pierce and Umberto Eco, Journal of City Identity, pp. 79-111.
- 10- Shams, Majid and Khoda Karami, Mahnaz (2010), "Study of vernacular architecture compatible with cold climate Case study: Sanandaj city", Geographical Quarterly Journal of Environmental Management, No. 10, pp. 114-
- 11- Shelley, James, (2006), "Empiricism : Hutchison and Hume", Fifth Edition, Encyclopedia of Aesthetics, Editor: Mishita Alaei, Tehran: Publications of the Academy of Arts
- 12-Toofan, Sahar (2010). "Study of the relationship between the concept of female privacy and the creation of entrance space in Iranian architecture", Quarterly Journal of Women and Family Studies, Fourth Year, No. 14, pp. 119-142.
- 13- Tabatabai, Mohammad Hussein (1417). "Balance in the interpretation of the Qur'an", vol. 15, Qom, Islamic Publications Office
- 14- Ali Al-Hesabi, Mehran Ali and Ghorbani, Abolfazl (2014), "Study of the characteristics of the entrance space as a joint and visual privacy in adjacent public areas; a case study: Bandar Laft", Quarterly Journal of Islamic Architecture Research, No. 5, Pp. 87-108.
- 15-Amid, Hassan, (1342), "Amid Culture", publisher of Sina Library, Tehran
- 16-Moin, Mohammad, (1981), "Persian Culture", Volume One, Amir Kabir Publications, Tehran, Fourth Edition

- 17-Memarian, Gholam Hossein (2007), "A Journey in the Theoretical Foundations of Architecture", Soroush Danesh Publications, Tehran
- 18- Motalebi, Qasem and Javan Forouzandeh, Ali (2011), "The concept of sense of belonging to a place and its constituent factors" *Journal of City Identity*, Eighth Issue, Spring and Summer, pp. 37-27.
- 19- Molanaei, Salahuddin and Soleimani, Sara (2013) "Recognition of the components of the original identity of vernacular Iranian architecture in the west of the country, a case study: Oraman Kurdistan", *Armanshahr Journal of Architecture and Urban Planning*, No. 17, pp. 115-127.
- 20- Mehdi Poor, Hossein, Rashid Jafari, and Seyed Pooran Dokht Sadati. (2013), "The position of Jalukhan in the vernacular residential architecture of Iran", *Housing and Rural Environment* 22 (132): 18-3.
- 21- Nemat Gorgani, Umm Al-Banin, 2002, "Background of Light in Architecture and Lighting Fixtures in Islamic Art of Iran", *Journal of Works*, No. 35. Pp. 323-316
- 22-Nikghadam, Niloufar (2012), "Climatic models for functional housing spaces in the hot and humid climate of Iran", unpublished doctoral dissertation, supervised by Mr. Shemirani, Seyed Majid Mofidi, Tahabaz, Mansoureh, Faculty of Art and Architecture, Islamic Azad University Tehran Science and Research Unit, Tehran
- 23-Nari Qomi, Massoud. (2010), "Semantic studies on the concept of introversion in the Islamic city". *Fine Arts of Architecture and Urban Planning*, No. 43, pp. 81-69.
- 24- Nilforoshan, Mohammad Reza, 2002, "Isfahan Entrances", *Architectural Art Culture*.
- 25- Hashemi, Seyed Reza (1375), "Street Architecture", *Abadi Magazine*, vol. 20, p. 2.
- 26-Yadalahe, Sepideh, Adiban, Mohammad (1398), "Study of the hierarchy of entering mosques" *Quarterly Journal of Iranian and Islamic Restoration and Architecture Research*, pp. 9-26.