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Aba weaving architecture of Mohammadieh as a space for life and employment of the elderly

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ABSTRACT

The architectural space is important with fundamental features that human characteristics are the most valuable properties of such environment. So, the architectural space that meets the humanitarian needs over time, should be persistent, and is attentive and noteworthy. The current survey aimed to identify the vernacular architecture of aba weaving workhouse of Mohammadieh of Nain and study and analysis of its features to how they have basic role in older people's employment and life. The survey investigated to answer two main questions including what were the architectural features of aba weaving workhouse of Mohammadieh of Nain and how was the role of aba weaving workhouses in feeling alive and usefulness in the elderly. The research method was a descriptive and the findings were analyzed comparatively and analytically in the tables. Data collection was carried out by field study, observation and library studies. The sample size consisted of subjects who were in aba weavers work houses of Mohammadieh, that the total number of workhouses were ten, that in final analysis the number of 5 workhouses of aba weavers workhouses could be generalized to other aba weavers workhouse were evaluated for more accurate and analyzed by comparative method. The results showed that the vernacular architecture of aba weavers workhouse in Mohammadieh, Nain regardless of being simple were formed in response to cultural, climatic and public livelihoods needs were able to response to social and personal needs of the elderly by creating the right atmosphere for elderlies job according to their physical strength. As a result created self-esteem of doing a purpose and sense of usefulness and belonging in the elderlies are of benefits of doing aba-weaving.

1. Introduction

Given that Iran is a country with diverse climate that in each climate area has created a special culture, followed by a climate and culture, has made a variety of architectural space. The land of Iran can be classified in 5 climate that each of these climates are also has different climates. Hot-humid, warm-dry, cold, temperate, mild- humid climates are suitable classification for Iran. In each climatic region, sub climates create particular local characteristics that have affected the architecture spaces. Thus, in each climate difference in sub climates, culture and architecture space are seen (Kasmaee, 2005; Olgyay, 2015; Erell et al., 2003). Given that the city of Nain has a very ancient history, the comprehensive studies of architecture has not been done in this area and due to the formation of new tissue and urban environment, historical, old and valued tissues have made contrariety and unorganized which cause gradual destruction of these areas and architectural spaces. According to workhouses architecture and their survival regarding to the climate and culture of the region, these question were raised that how are the architectural features that after passing years still able to maintain their survival and how a simple, vernacular and rich architecture can be central to life in old age and employment of the elderlies and creating their social identity. This study investigated to identify and study the historical context of the city of Nain (Mohammadieh), aba weaving workhouses architecture that are unique and have valuable architectural elements and how to spend their old age in these workhouses. For this purpose to compare and evaluate the characteristics of these workhouses, their architectural elements were in samples that played an important role in the introduction of the vernacular architecture of the

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region. The overall structures of this research consist of three parts. The first part included geographical, physical and historical features of the city of Nain and Mohammadieh, the second part contained the characteristics of the historical context of Mohammadieh and the third part explored the aba weaving workhouses (Eun Kim and Tokura, 2000).

1.1. Geographical, climatic and historical features of the city of Nain and Mohammadieh

1.1.1. Geographical features and location

The city of Nain, the center of the city of Nain, is the largest city of Isfahan. The city of Nain limits from the north to the desert field, from the East to the city of Tabas, from the West to the foothills of the city of Isfahan, from southern part to Ardakan, Kharanegh Bafgh of Yazd city. Nain has located in plain more or less flat (South beach of Desert plain) and is about 1600 m above sea level. The city has dry climate. Nain city because of its expansion has multiple sections of the mountainous and plain igneous, that these mountains are generally sedimentary, residuary and metamorphic rocks and because of lacking permanent rivers, sediments deposited along the stream and to dry the area, created sedimentation emerging from floods have deposited as strata (Kiaee, 1987).

1.1.2. Mohammadieh climate

In climatic zoning of Iran, Mohammadieh has located in the fifth climate that in winter is relatively cold and in summer is too hot. The factors affected in the development of this climate are latitude, altitude, to be near to Iranian deserts as well as high pressure centers and air masses. The combination of these factors has caused the Nain climate to be formed. Nain city because of being close to Iran's central desert and away from the sea and basically happening stable of high-pressure air system component is of arid and dry areas of central Iran that follows the rhythm of the rain of central Iran that more rainfall occurs in winter, autumn and spring and the summer is long and dry. The average annual temperature in the city of Nain was 16.5°C, and the absolute maximum temperature and absolute minimum temperature and temperature range of variations were 41.5°C, -26°C, and 67.5°C, respectively. In total, according to precipitation, evapotranspiration, temperature, and etc. the city of Nain in terms of the climate was considered as semi-desert areas (Kasmaee, 2005) (Fig. 1).

1.1.3. Vegetation

The vegetation of the area due to weather conditions covers desert areas vegetation. Special crops in plain and desert regions included Haloxylon, tamarisk, Calligonum spp, wild spinach, Seidlitzia rosmarinus (Ehreb) Bge, caltrop, Stipagrostis plumosa, Halophyte plants, Smirnova turkestana Bge and other species resistant to drought and saline-friendly that actually has deep roots, fleshy and scaly leaves and even some of these take the fall when the weather warms and yearling also for the use of low soil moisture has a short life cycle, less than a month.

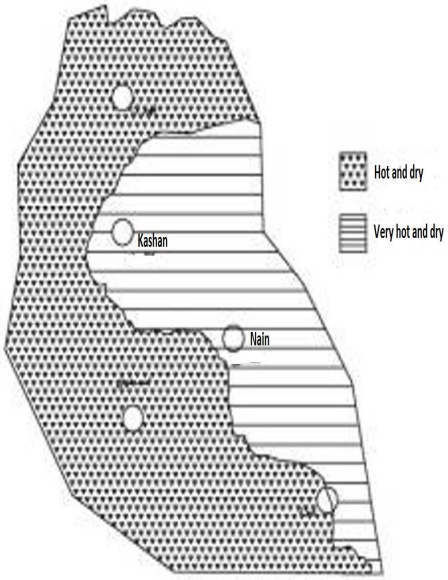


Fig. 1: Climatic zone of Mohammadieh, Nain, Isfahan Province and neighboring provinces (Kasmaee, 2005)

Yield per hectare of pasture harvested less than 100 kg in the mountains and in desert pastures; the yield was less than 40 kg. However, due to the high costs of livestock and lack of economic justification for investment and professional hardship and persistent droughts in the region, the number of cattle on pastures has reduced over the past two decades and the ranges of plants had a considerable improvement (Kheirabadi, 1998).

1.1.4. Cultural and historical characteristics

Nain in history has been called by titles such as Ghasabe-e-Taiba, Daralerfan, city of mosques, city of mystics. Names reflect the fact that although Nain was not populous city but over a long time, thought and culture has flourished in the city and people have attached special importance to religion. By the point of the art view, people of this region, have created brilliant works and the old crafts. The major crafts of the region are carpet weaving and aba weaving. So that carpet weaving was as the second job of many peoples of this region. Aba weaving in the past has more booms and today more people are getting old and employed in this field.

1.2. Social characteristics of Nain city and its different neighborhoods

Long-term history of the city of Nain and Mohammadieh as a biological point has led to create identity and prominent level. One of the distinctive

features of Nain and Mohammadieh was neighborhood and engagement of citizens and the body of the city that have created unique spaces for the city. The city of Nain, like many towns rich with the history of architecture and urban planning witnessed two types of bodies in the urban environment.

One aspect of the body of valuable historical, cultural and physical beauty of architecture and urbanism and the other that has formed after post-modernism that lack the particular architectural identity of Nain:

1.3. Historical and cultural valued texture of Nain and Mohammadieh

1.3.1. New texture of Nain (after 1952)

Today, in the old texture of Nain and Mohammadieh, more damages and strokes have been done, but still show a lot of developers' right thinking. Particular form and arrangement of houses, introspection and density (in order to adapt to the climate, increase endurance of building, limitations and the value of arable land around the city, etc.), are of the country's architectural solutions.

1.3.2. Features of organic tissue of Mohammedieh

Complexity: non-geometric form of residential plaques and winding passages into the tissue that can consider many reasons, including evolution over time.

Tissue orientation: the direction of locating the buildings, especially residential buildings that surround the most parts of the city and the orientation of the plaques have been under the influence of natural factors or mass and prominent and important areas of city.

Focal points: of the collision of major orders in the cities, the centers are formed. Urban centers (the confluence of the important issues) along with tracks make up the structure of cities. In fact, the centers in Mohammadieh, were neighborhood centers and the openings in the front of the mosque.

Compression: Another feature of this texture was compression, which is now under titles such as the compact city and also discussed and considered as sustainable city (Soltanzadeh, 1995; Shaterian, 2008) (Figs. 2 and 3).

Fig. 2: Aerial imagery of Mohammadieh, Nain, Isfahan (www.googlemaps.com, retrieved in 2015)

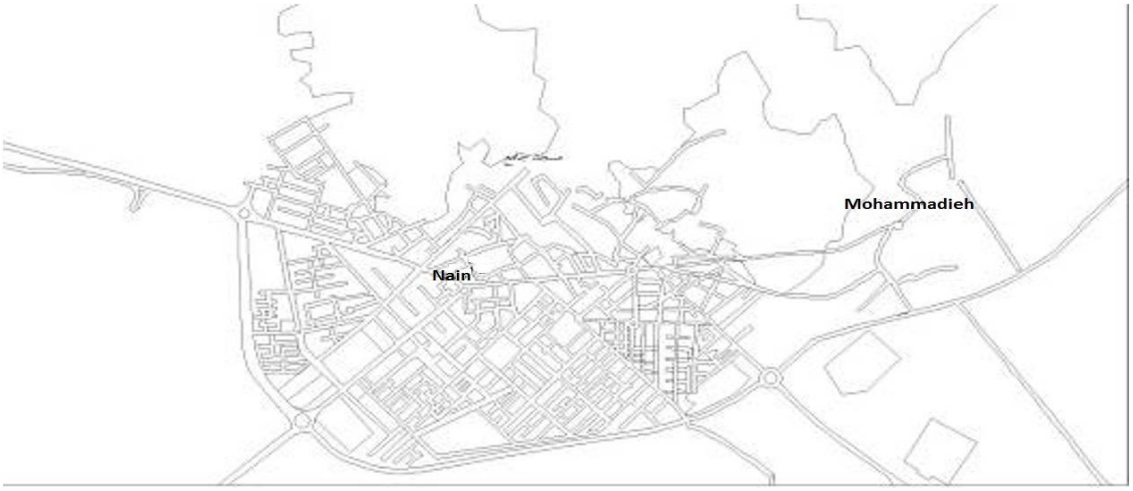


Fig. 3: Roadmap and texture of Mohammadieh, Nain, Isfahan

1.4. Rocky architecture

The definition of rock architecture: rocky architecture is fight scenes and human struggling with nature and using natural rocks. This type of

architecture is more and very important than typical architect in terms of reconstruction. In typical architecture by building materials such as limestone, gypsum, brick and adobe, the original architecture is created and space is the result of the main configuration and bulk of the architecture of the building. But in rocky architecture, its reverse flow. It means that the architecture starts from space (Rezvani, 2004). Rocky architecture is divided into two types in case of space and the body:

Type I: this type of rocky architecture is formed inside the great and free rocks and separate from each other and create multiple spaces that allocates to a residential unit or indigenous units and even the outside of such rocks can be carved or decorated and the window and skylight are placed in them. Plans are often subject to specific conditions of the building ground (Mojtahedzadeh, 1999). An example of such architecture can be found and noted in the "Cappadocia Turkey" and architecture of "Kandovan" (Mojtahedzadeh, 1999).

Type II: multiple spaces within the Rock Mountains and hills are created and have no exterior and window and light holes cannot be created in them and its important examples of rural rock architecture are in Meymand and architecture of workhouses of aba weaving of Mohammadieh, Nain (Shaterian, 2008). In this type of architecture, all areas are caved in the mountains and houses are on the rocks. As results the spaces have no heater and chimney and are sealed.

1.5. Aba weaving

Aba weaving is as ancient crafts prevalent in Mohammadieh, Nain. The aba of this area is woven in red and brown with wool and fluff. More workhouses of aba weaving in Nain are located in Mohammadieh neighborhood. In the 1970s, annually, up to 5000 aba were exported from this town.

1.5.1. History of aba in Nain

Aba of Nain is a traditional covering that roots in the distant past and before aba weaving, burlap and toile, flax and traditional textile weaving, were more general. But nobody knows when and how aba weaving got common in Nain, but what is certain is that it was common in Safavids in Iran and may be because of Nain being close to Isfahan, it was the center of Safavid state and this art has been gotten common in Nain. The Nain aba in the Qajar period has had a significant boom and widely and in the Pahlavi era with tends to west culture, this traditional cover declined and up to now its usage has minimized. Production of Nain aba needs capital, skills and technology, and it has welcomed more in the Nainee middle class. As it can be said in the streets of Mohammadieh, more than 80% of the people involved in the preparation of aba, so Mohammadieh was one of the great centers of production and preparation of aba; and it is the best kind. These abas were woven in workhouses called "Cellars". Cellars have been dug into at 3 to 4 meters at the clay. Cellars were physically cold in winters and hot in summers and did not need heating and cooling devices. In recent years, several cellars have been restored by the Heritage Foundation as the number of aba weaving workhouses in Mohammadieh. It is said that one time, there were more than 500 abas weaving open and active device in the cellars, but now only 10 to 15 devices are only held by the elderly and for part-time (Soltanzadeh, 1995; Seyed and Seyed, 2007; Matin, 2004).

1.5.2. Types of abas

Hundred years ago, aba had especial value and was a covering among Iranians, especially middle-aged and elderly people, so, it was tried to prepare different aba according to people tastes and purchasing power. Thus, in its context of special attention was given to color, sewing, and material. The thin aba and the delicate aba for rich merchants and shopkeepers and hairy aba for farmers and thick and stocky aba for cameleers and herders were used (Matin, 2004). The quality of each aba was that during takeoff and landing is not wrinkled and to be wide, free and tailored. Therefore, in the past, two types of abas were produced and prepared and its winter type was thick and sturdy to completely prevent of frost penetration. The durability life of each aba was 30 to 40 years if prevent it from corrosion moth.

1.5.3. Aba weaving workhouses

Aba weaving workhouses are available on organic tissue with unique and concentrate architecture.

These workhouses include two workhouses of on the ground and basement types (Figs. 4 and 5).

In Mohammadieh, various cellars of aba weaving using digging techniques has made that in each of them usually 8 to 10 people were employed and currently 1 to 2 persons are employed. The material of aba of Nain made of camel or sheep wool and the roll length of each aba was 6 m and weighs 5.2 kg. Machines for aba weaving is made of wood and straw and includes components such as rollers in the front and back of machine and comb in the middle and two pedals to open the warps and more.

1.6. Aging and the how to passage of time

Aging is a phenomenon with aspects of biological, psychological and social. Aging usually is defined in terms of chronological age and generally, 65 years old is considered to start aging (Ruth Craven 1374). Perhaps an elderly person, senses himself/herself be young in terms of their psychological, or vice versa it may be a society forces a person who is not biologically and mentally health to force the elderly social roles to be done. Rarely happens that the

biological aging to occur simultaneously with mental and social aging in a person (Kiaee, 1987).

Fig. 4: Aba weaving in workhouse

Fig. 5. Range of aba weaving workhouse

1.6.1. Social status of the elderly

Social status of a man in the days of old, like the other periods of his/her life belongs to the community that lives in it and is distinct and defined by it. Society during giving role and social base to elderlies or receiving them, consider personal characteristics such as the amount of physical fraction and individual experience type. Based on the current thinking, the society is of a whole that has consisted of persons and its members are separate from each other but because of the need to mutual relation and interrelate are coalescent to each other. The sense of feeling valuable creates in a person when the person has social participation and in this case be respected by the others. We know well that normally this sense of belonging and value creates in family. "In old age and retirement, impatience and sense of losing of value overcome on them. So, it can be concluded that the health of the elderlies is related to their physical activity and effort. Immobility and lack of activity lead to indifference and apathy to the elderly, which in turn destroys all interest to the activity. So, it is necessary that elderly people be active among their peers in their social life and do certain activities and teamwork and fun. Thus, creating retirement centers and nursing homes with appropriate design of these can be very useful (Kasmaee, 1992, 2005; Crawn, 1995).

1.6.2. Elderlies activities

Activity and engaging to work for the elderlies are very important. Activity of any kind generally improves morale of elderlies. The results showed that elderlies healthy were in direct correlation with activity and physical efforts and they have lost their interest with occupations that need intense effort and skill. Especially in older people aged over seventy years that power is much reduced (Givoni, 1997).

1.6.3. Hierarchy of needs

All behavior and human action are the effect of causes and this cause or causes lead to people to build up or release the working, in fact, the incentives cause people to express their talents and to act (Table 1).

Table 1: Hierarchy of needs in Maslow's views

Self-actualization: to realize the esteem and actualization of potential ability
Hobby needs: symmetry, order and beauty
Cognitive needs: to know and understand and explore
Esteem needs: performance and achievement, demonstrating the adequacy in the work, to be approval and recognition by others
Belonging and love needs: to join others, accepted belonging
Safety needs: to feel safe and away from danger
Physiological needs: hunger, thirst, and so on

1.7. Elderlies and aba weaving

Due to the aging phenomenon, the social needs of elderlies and the elderly activities, it can be found that having activity that meet individual and social needs of older persons, can be very effective in the elderly period. As mentioned, aba weaving is an occupation that due to inertia and limited physical needs is useful for the elderlies and creates self-esteem as a result of doing a purpose, a sense of belonging and usefulness in elderly person. In addition to the rich architecture, aba weaving workhouses in addition to simplicity create a safe environment and meeting space for.

2. Methods and material

To understand the characteristics of vernacular architecture of aba weavings, at first the study of climate and historical characteristics of Mohammadieh was performed. In the current survey the descriptive-analytical methodology was used and for data collection was done by field and library studies. The statistical population consisted of aba

weaving workhouses of Mohammadieh that the number of examined samples was ten of which in the final analysis, five samples that could be generalized to other aba weaving workhouses were evaluated for more accurate and analyzed by comparative method. Based on the results of this study, at first the architecture of aba weaving workhouses was classified into two types. About the plan of aba weaving workhouses, because there was no document, their plan charged. In order to better compare and understand the selected samples, imagery documents of the selected samples were placed together in a table and at first the descriptive study was conducted. Then, to achieve the objectives of the research, features such as counters, entrance, façade, functional relationships of spaces, interior architecture and their specific features were compared and analyzed.

3. Results

In this part, understanding of the architecture overall landscape of aba weaving workhouses in two different types will be discussed. In order to more accurate of the whole characteristics of number of samples and to generalize them to other samples in the mentioned area, in order to allow better comparison have been brought together.

Asadi aba weaving workhouse: this workhouse that has built in the northwest direction, with the rectangular plan close to square and about 20 square meters. Its materials were thick brick walls that were the only materials available in the desert. The notable point of this workhouse was that unlike other workhouses, this building was located on the ground and tried to use appropriate orientation, the proper materials and ceiling height combat with warm climates of desert (Figs. 6 and7).

Fig. 6: Asadi aba weaving workhouse

Fig. 7: During aba weaving

A spatial relationship in the building was direct and accesses were linear. The entrance of the Workhouse with concavity, brick arches and skylight above the door has evolved the architecture of Workhouse very well.

Soltani aba weaving workhouse: this workhouse was located in the northwest direction, too, with brick material and with a rectangular shape plan and infrastructure about 40 square meters (Figs. 8 and9).

Fig. 8: The position of the aba weaving inside the ground

Fig. 9: Soltani aba weaving workhouse

In this workhouse there were six devices that in each part one person could do some part of aba weaving. Location f devices were dig on the surface of ground in order to aba weaver lie his feet on it in sitting state. Its entrance besides of being simple by changing floor material and going down and having stile, playing with light and shadow play its role very well.

Ghayoomi aba weaving workhouse: This building was decorated with brick materials and with brickwork, too. The infrastructure of this workhouse was about 50 square meters and in a tunnel digging shape (inside the ground) (Figs. 10 and 11).

The plan was rectangular with direct access and linear relationship. The notable point about this workhouse was that this workhouse has been refurbished in recent years and brick decorations have been added after restoration. The entrance of this building due to relatively large entrance porch that was lower than ground level was well differentiated from other workshops.

Beigi aba weaving workhouse: the building of this workhouse was both brick materials and without

decorative. Its plan was rectangular, linear and accesses were direct. This workhouse was also in a tunnel digging (Figs. 12 and 13).

Fig. 10: Ghayoomi aba weaving devices

Fig. 11: Renovated workhouse of Ghayoomi

Fig. 12: During aba weaving

Fig. 13: Renovated workhouse of Beigi

At the end of the workhouse building, there were a window and door open to a space that currently was vacant warehouse, and it suggests that this workhouse had two entrance doors. Active infrastructure was about 24 square meters and, according to many locals in this humble workhouse, one of the world's most desirable aba was woven. The entrance of this building was specified by a lower dislocation, stairs and one metal door.

Madanian aba weaving workhouse: Madanian workhouse was of relatively large workhouses in this area with infrastructure about 75 square meters. The workhouse was built by brick materials and was tunnel digging shape (Figs. 14 and 15).

Fig. 14: Madanian aba weaving devices

Fig. 15: Workhouse and exhibition of Madanian

This workhouse beside of aba weaving, wove carpet and other crafts and in addition to sales, some of his works visited for exhibition. Another important point about this workhouse was attending the younger generation alongside the elderlies and creating diversifies in their working. In the Table 1 of plan, section, combined bulk of workhouses was examined. Depending on the architecture of such buildings, the devices parts were dug into the ground, and often placed 1.5 to 2 meters below the aba weaving surface (Table 2).

4. Discussion

4.1. Relation between components and performance of spaces in plan

The workhouses buildings, the form of plans often were on a rectangular plan and linear. The access route in aba weavings plans was direct. Regarding to being within the land of the workhouses, the spaces were designed to be opened and closed. The main functions, such as working with devices, seating and ancillary functions such as fairs and shops, can be seen in the workhouses. In Table 2 has been tried, to examine the relationship between plan components of samples, performance and track accesses (Table 3).

4.2. Entrance

In each architectural service, the entry plays an important role. In aba weaving workhouses, also the

entrances and its decorating, create the sense of legibility and inviting with measures such as depression and changing materials. In most of these workhouses, the entrances are the only light outlet, too and are as a bridge between the ground surface and inside. In the table below, study of entrances according to specific architecture of workhouses were investigated (Table 4).

4.3. Interior Design of aba weaving workhouses

Interior design of aba weaving workhouses also considering that most of them has been drilled on the ground benefited of architectural elements that meet their needs of social and cultural. Of these elements could note to the platform, shelf and interior decorations.

Platform: In most aba weaving workhouses, at the end of the building a platform has been intended that usually was the resting place and tea lounge and meeting of weavers and also besides seating device, there was a small platform to put tools (Figs. 16 and 17).

Fig. 16: The sample of end platform of workhouse

Fig. 17: The sample of middle platform of workhouse

Ledge: in all aba weaving workhouses, there were small ledges to insert the devices and tools. The interesting point was that the height of these small ledges was so that the person sitting could use them and other ledges that were used in a standing position (Fig. 18).

Fig. 18: An example of ledge in the workhouse

Interior decorating: due to ethic and religious belief, aba weavers in most workhouses, used worship and praise verses and photos for interior decorating. In addition, some tools and equipments as well were installed on the wall for the beauty of the space. In some workhouses also works, old tools and handcrafts for the exhibition have been exposed (Fig. 19 and 20).

5. Conclusion

After research, these results are coordinated that the architecture of aba weaving workhouses of Mohammadieh, totally were based on the vernacular architecture of the region. The architecture of these buildings with thick walls and projecting to basement could make the ideal air in hot summer and cold winter weathers. In addition, architects of buildings have used entirely indigenous materials in the construction and drilling of these workhouses. Such architecture thoughts that have participate with native art and culture, and could create a place for aba weaving that is an original art in this area.

The architecture of these buildings in quite simply with walls and managed entrances could create need to secure in aba weavers that often were elderlies. This architecture, with the creation of the platform and sitting place, created a space for gathering the elderlies that in resting time, to meet the social needs including communication, belonging and favorite.

Fig. 19: Examples of verses and sayings

Fig. 20: Example of old objects and artifacts

Table 2: Study of aba weaving workhouses

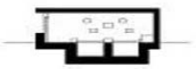
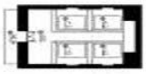
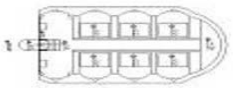
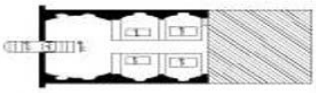
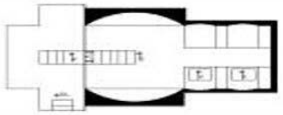
Geographic location of old Mohammadieh, Nain, Isfahan			The sample
combined bulk	Section	Plan	
			ownership: Asadi materials: brick arch, tile, capped, covering infrastructure: about 40 square meter Description: Workhouse on the ground
			ownership Soltani materials: brick arch infrastructure: about 40 square meter Explanations: tunnel digging
			Ownership: Ghayoomi Brick arch, all around were bricks, infrastructure: about 50 square meters explanations: tunnel digging
			Owner: Beigi, materials: brick arch, infrastructure: about 24m² explanations: tunnel digging, spaces type
			materials: brick arch, infrastructure: about 75m² explanations: tunnel digging

Table 3: The relationship among components and performance of spaces (reference: the authors)

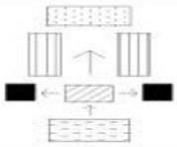
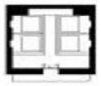
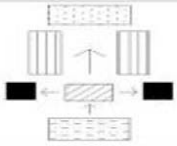
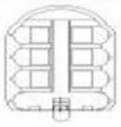
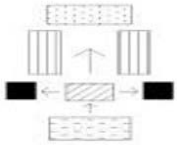
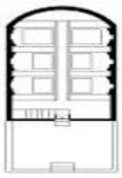
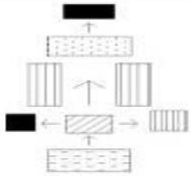
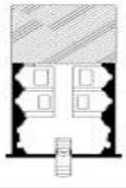
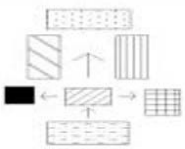
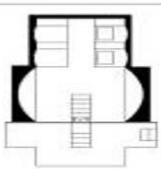
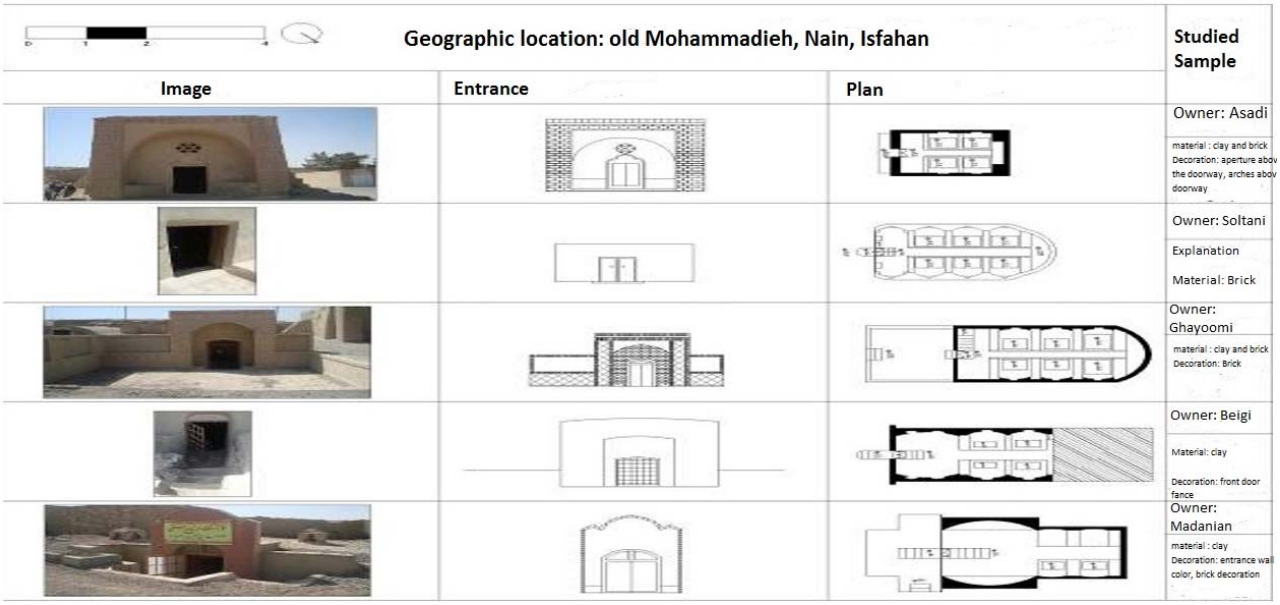
Geographic location: old Mohammadieh, Nain, Isfahan			Studied sample
Relationship of spaces	Type of plan	Plan	
	Plan was linear and rectangular nearly square. Access routes in plan were direct.		Owner: Asadi Materials: brick roof, tile covering area: about 30 m² Description: Workhouse on ground
	Plan was linear and rectangular form and at the end, was curve shape. Access routes in plan were direct.		Owner: Soltani Materials: brick roof, area: about 50 m² Description: tunnel digging
	Plan was linear and rectangular form and at the end, was curve shape. Access routes in plan were direct.		Owner: Ghayoomi Materials: brick roof, all around was brick area: about 50 m² Description: tunnel digging
	Plan was linear and rectangular form. At the end, there was an invisible storage space. Access routes in plan were direct.		Owner: Beigi Materials: brick roof, area: about 24 m² Description: tunnel digging
	Plan was linear and rectangular form. Access routes in plan were direct.		Owner: Madanian Materials: brick roof, area: about 75 m² Description: tunnel digging
Counter, Entrance, Storehouse, Devices, Sitting platform, Store, Exhibition			Types of spaces

Table 4: Entrances



Therefore, architectural space, tailored to local needs and conditions for the elderlies could create a place for decent job for the elderlies that as a result of the local culture, have an interest in it, and made self-esteem, sense of being useful as performing a purpose in old age life. So by understanding the needs of the elderlies and identifying basic facilities to promote health and life of this period of life that are mixed with the culture and climate, it can has important role in society social health (Rezvani, 2004).

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